Predictors of engagement, response to follow-up and extent of alcohol reduction in users of a smartphone app, Drink Less

Claire Garnett

Olga Perski, Ildiko Tombor, Robert West, Susan Michie & Jamie Brown

University College London

@ClaireVGarnett

INEBRIA conference 2018

Acknowledgments

Huge thanks to the incredibly talented and patient app developers we worked with (Greg Plumby, Edward Warrender, Chris Pritchard and Hari Karam Singh).

Background

- Digital interventions for alcohol show promise, they:
    - can help reduce excessive alcohol consumption[1],
    - can improve accessibility of support,
    - have a low incremental cost, and
    - have a broad reach.

[1] Kaner et al., 2017. Personalised digital interventions for reducing hazardous and harmful alcohol consumption in community-dwelling populations. *The Cochrane Library*.

Background

- The Drink Less app
    - for excessive drinkers in the UK
    - developed using evidence and theory
    - factorial RCT [1]
        - Four intervention modules may assist with drinking reduction
        - Suffered from high rates of attrition
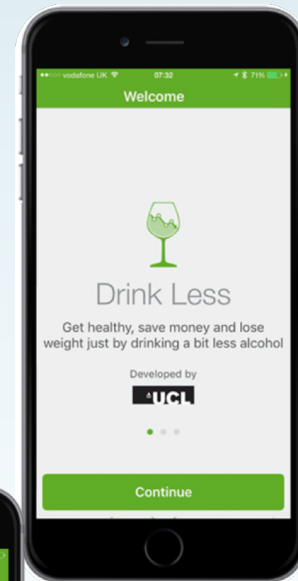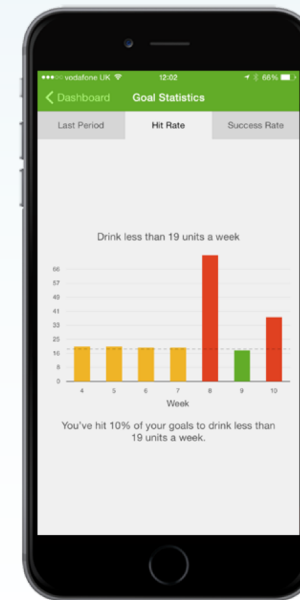
[1] Crane, Garnett, et al. 2018. A smartphone app to reduce excessive alcohol consumption: Identifying the effectiveness of intervention components in a factorial randomised control trial. *Scientific reports*, *8*(1), p.4384.

Background

- Eysenbach's Law of Attrition [1]
  - Non-usage = low engagement (extent of use)
  - Dropout = low response to follow-up

- Minimum level of engagement assumed to be necessary for an intervention to work

- Low rates of response to follow-up reduces statistical power

[1] Eysenbach, 2005. The law of attrition. *Journal of medical Internet research*, 7(1).

Aim

To investigate the associations between user characteristics, engagement, response to follow-up, and extent of alcohol reduction in Drink Less

Methods

- Design
  - Secondary data analysis from factorial RCT

- Intervention
  - Drink Less app
  - Assessed for the 28 days following download

- Sample
  - Aged 18+, from UK, AUDIT >=8
  - n=672

Methods

- Measures

  – Socio-demographic & drinking characteristics (baseline)

  – Engagement (automatic recording)

    • Time on app, minutes *(amount)*

    • % of screens viewed *(depth)*

    • Number of sessions *(frequency)*

    • Number of days used *(duration)*

  – Response to follow-up

    • Completion of questionnaire (yes/no)

  – Extent of alcohol reduction

    • Change in past week alcohol consumption

- Analysis

  – Unadjusted and adjusted regression models

  – Pre-registered on Open Science Framework (https://osf.io/htfrp/)

Results

Participant characteristics (n=672)	
Age in years, Mean (SD)	39.2 (10.9)
Gender, % female (n)	56.1 (377)
Employment status, % employed (n)	86.5 (581)
Ethnicity, % white (n)	95.2 (640)
Education, % post-16 (n)	72.0 (484)
Current Smoker, % (n)	24.6 (165)
Past week alcohol consumption in units, Mean (SD)	39.9 (27.3)
AUDIT score, Mean (SD)	19.1 (6.6)
Engagement measures (n=672)	
Number of sessions, Median (IQR)	5 (2 – 17)
Time on app in mm:ss. Median (IQR)	17:14 (8:53 – 37:19)
Number of days used, Median (IQR)	4 (2 – 13)
Percentage of available screens viewed, Mean (SD)	39.0 (13.3)
Response to follow-up measure (n=672)	
Completion of one-month follow-up, % (n)	26.6 (179)
Extent of alcohol reduction in those followed-up (n=179)	
Reduction in past week alcohol consumption in units, Mean (SD)	14.3 (24.1)

Associations between user characteristics and…
…(1) engagement

- Time on app, minutes *(amount)*
  - Age: B=.03, p<.001
  - Education: B=.18, p=.030
- % of screens viewed *(depth)*
  - Age: B=.28, p<.001
  - Education: B=4.04, p<.001
  - Gender: B=1.99, p=.049
- # sessions *(frequency)*
  - Age: B=.03 (.02, .03), p<.001
  - Education: B=.36 (.15, .57), p<.001
- # days used *(duration)*
  - Age: B=.02, p<.001
  - Education: B=.28, p=.003

Associations between user characteristics and…
…(2) response to follow-up

- Age: OR=1.04, p<.001
- Education: OR=2.11, p<.001
- Gender: OR=1.58, p=.020

…(3) extent of alcohol reduction

- Past week alcohol consumption: B=.49, p<.001
- AUDIT score: B=.98, p<.001

Associations between engagement and…
…(4) response to follow-up

- Time on app, minutes *(amount)*
  - OR=1.02, p<.001
- % of screens viewed *(depth)*
  - OR=1.09, p<.001
- # sessions *(frequency)*
  - OR=1.08, p<.001
- # days used *(duration)*
  - OR=1.13, p<.001

…(5) extent of alcohol reduction

  - no significant associations detected

Conclusions

- Users of Drink Less who were older and had post-16 education qualifications engaged more and were more likely to respond at one-month follow-up

- Engagement was positively associated with response to follow-up

- Higher baseline alcohol consumption predicted a greater extent of alcohol reduction amongst those followed-up

- Engagement was not associated with the extent of alcohol reduction

Strengths

- First study to investigate these predictors in an app-based alcohol intervention in UK
- High ecological validity

Limitations

- Modest sample size
- Summative measures of engagements

Future research

- Confirmatory RCT to assess Drink Less
- User typologies for engagement
- Specific patterns of engagement

Implications for Drink Less

- No overall dose-response effect
- Consistent with findings from factorial RCT
- Certain modules were more effective than others
- Suggests exposure to particular modules is more important than intervention dose

Thank you. Any questions?

For further details

c.garnett@ucl.ac.uk or www.drinklessalcohol.com

or publications: search 'Drink Less' on Research Gate for project details