MoodRush: Designing a Language-free Mobile App for Mood Self-assessment

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Abstract: Depression affects a large percentage of young adults across the globe. The delivery of mental health information and the provision of tools for the self-assessment of mood are important means in addressing this problem. While self-assessment of mood is becoming more common through web resources and mobile applications, existing resources are limited in multiple ways. First, they typically include a significant language component and are therefore not suitable to youth with limited literacy/speakers of other languages. Second, existing tools are not visually engaging, usually constituting questionnaires presented on monochromatic background. Third, existing tools are limited in their clinical validity. This paper presents the background to the creation of a prototype mood self-assessment tool delivered via a mobile app. Based on a clinically validated mood self-assessment measure, the prototype guides the user through 21 pictorial questions and provides overall feedback. The user's level of engagement is assessed using data provided by GoogleAnalytics and compared to their engagement with, and response to, the standard written self-assessment questionnaire.

Keywords: Mobile app; depression; young adults

Background and problem

New Zealand has the second highest youth suicide rate of all OECD countries and the most critical age range is 15-24 (Bromet et al., 2011). In addition, international students globally experience high rates of depression (Furnham & Tresize, 1981). This is coupled with lower usage rates of mental health support services by the international student body (Ward, 2001). Contributing factors include lower service accessibility and increased isolation/decreased social contact (Sam & Eide, 1991).

A range of mental health support options including community-based, computer-based and phone depression treatment as well as online mental health information are available to young people in New Zealand. The provision of online offers seems particularly important given that in New Zealand 91% of people aged between 18 and 34 own a smartphone and spend significant amounts of time on their device (Vacaru, Shepherd, & Sheridan, 2014).

In addition to mental health support, the delivery of online mental health information allowing the individual to identify whether they are affected by a mood disturbance that warrants treatment (Levitt, Saka, Hunter Romanelli, & Hoagwood, 2007) is crucial. Self-assessment is therapeutically beneficial, contributes to a better defined self-concept, facilitates self-regulation and is a key to goal setting (Sedikides, 1993).

Existing online mood self-assessment tools are limited in that they most often include short versions of clinical self-assessment measures with limited clinical validity. Similarly, mood apps, even if carrying official endorsement, often have not undergone testing for clinical validity (Leigh & Flatt, 2015) or efficacy (Donker et al., 2013). Existing tools also require a level of language proficiency and (health) literacy that may not be given in young people with English as a second language (Butcher & McGrath, 2004). Finally, mood self-assessment questionnaires on monochromatic background arguably are limited in how engaging/attractive they are.

Aim and research question

The aim of the present project is to design and implement a prototype mood self-assessment mobile application based on a validated clinical assessment tool that is language-free and engaging for youth.

The overarching research question is whether, compared to existing online mood questionnaires, a language-free mood self-assessment tool in the form of a mobile application is; (i) more engaging/attractive to a young population, (ii) more accessible to a young population with English as a second language, and (iii) valid and reliable in identifying young adults who are native speakers of English and those with English as a second language affected by mood disturbance.

MoodRush Mobile Interface Design

A prototype mobile app named MoodRush containing pictorial versions of the 21 item Beck Depression Inventory (BDI-II) (Beck, Steer, & Brown, 1996) has been created. Pioneered in the work with Latino populations, pictorial information in the form of a fotonovela has previously been shown to be particularly useful in delivering mental health information to young people (Cabassa, Molina, & Baron, 2012). In order to increase potential uptake overall and increase uptake across all categories of socio-economic status/minimise selection bias, the prototype app has been designed for the Android Operating System.

To date, the design for the log on screen (see Figure 1, far left) and language-free instructions have been completed with reference to the relevant guidelines ("Android User Interface Guidelines," 2017; Eichner & Dullabh, 2007; Nielsen, 1994). After the user logs in, they are presented with a tutorial (see Figure 1, left). In line with Nielsen's (1994) aesthetic and minimalist design guidelines and in order to reduce executive demands (Maalouf et al., 2011), the explanations included as part of the tutorial activity were kept to a minimum. Tapping one of the tutorial pictures gives the user instant positive feedback. Images are presented in a user-timed fashion, meaning they stay on screen for as long or short as the user requires to make their decision. A back button has not been included in the design to allow comparability between users' MoodRush scores and their BDI-II score which includes instructions to not overthink the response.
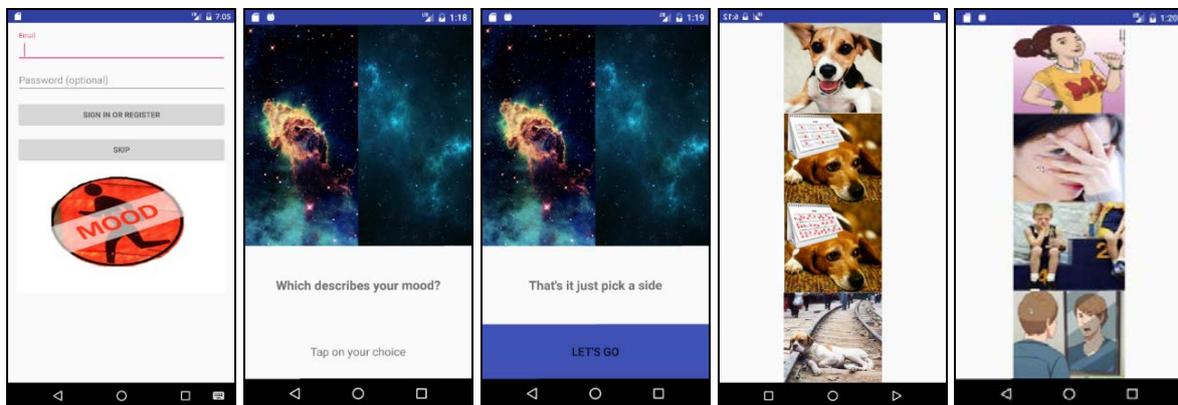

Figure 1: MoodRush prototype log in/start screen, MoodRush user tutorial, tutorial positive feedback screen and MoodRush prototype sample items exemplifying the choice of image style and content (left to right).

Since the intended audience for MoodRush is likely to come from a wide range of cultures and backgrounds and, for a proportion of users, English will be a second language, design decisions were not based on Western-centric models where possible. Examples of this can be seen in the more inclusive top to bottom screen design (see Figure 1, right and far right) and the use of a diverse range of pictorial response choices mostly comprised of cartoons and animals ensuring that not one race or ethnicity is highlighted (Clarkson, Coleman, Keates, & Lebbon, 2007).

MoodRush tracks user engagement and logs the data using GoogleAnalytics. Specifically, session time, completion rate and time spent interacting with the app in each session will be recorded. The prototype has also been configured to apply a weighting to user responses, to sum the weightings and store these in its internal database. The design of language-free feedback screens based on the sum of the weightings is ongoing.

Future directions

Pilot data will be collected from 20 Unitec students (10 domestic; 10 international students; age range 17-24). An interview will provide accessibility data; number of completed MoodRush items and User Engagement Scale (Wiebe, Lamb, Hardy, & Sharek, 2014) will assess engagement; and a comparison of participants' MoodRush and BDI-II scores will provide first clinical validity estimates. A large-scale evaluation study will follow and desirability of mood tracking, data sharing and caregiver involvement will be explored.

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