1. **Additional Information**

The *eTools for Wellbeing* project is being conducted at the Queensland University of Technology as part of the Young and Well Cooperative Research Centre (Young and Well CRC). The overall aim of the project is to design, develop and test the effectiveness of six positive mental health eTools (apps, websites) targeting the emotional, social, psychological and physical wellbeing of young people.

While 100% of young Australians access the internet regularly and 89% own a smartphone, there are few high quality mental health apps available. A review of the iTunes store in June 2013 identified only 558 mental health apps. A growing number of studies have highlighted the poor quality of health and mental health apps in terms of engagement, usability and functionality. There is also typically little information available on app safety or effectiveness, beyond ‘star’ ratings and consumer reviews.

To begin addressing these issues, a contextual review of the quality and effectiveness of existing mental health and wellbeing apps was conducted to identify important target areas for the development of the new eTools. However, the lack of existing frameworks for evaluating the quality of mobile health apps resulted in the development of the Mobile App Rating Scale (MARS) which provides a framework for classifying and assessing the quality of mobile health apps on a multidimensional scale (engagement, functionality, aesthetics, information quality and satisfaction).

The target areas identified for the other five eTools were: (i) an alcohol education and harm-minimisation app using ‘Ray’ a gamified animated red panda; (ii) an emotion regulation app using music; (iii) a website targeting psychotic-like experiences related to cannabis use; (iv) a gamified website aimed at increasing mindfulness practice; (v) and an app which helps young people cope with romantic relationship breakups by increasing social support and activity levels.

All six eTools are grounded both in research and user-participation. The design and development of each eTool began with participatory design workshops (PDW’s) with young people representative of the target-users. Each PDW was facilitated by psychologists, researchers, and designers. Initial ideas and concepts created by the young people and the team were cross-checked with experts in the relevant fields utilising the help, input and expertise of the Young and Well CRC’s 75 partner organisations. The design concepts were presented to the original as well as new participant groups through an iterative process until all aspects the content and design of the app were finalised.

Each of the eTools have undergone rigorous user testing to ensure they have high levels of engagement, functionality, aesthetics, information quality and satisfaction on the MARS. The efficacy of the eTools for improving the mental health and wellbeing of young Australians has been evaluated in five randomised controlled trials, each with 150-300 participants.

All eTools developed as part of this project are freely available for public use through the relevant app stores, and disseminated to the 75 partner organisations of the CRC.
2.1 Evidence of a significant contribution to the field of mental health on a local, state or national level.

**Mental health is more than the absence of mental disorders**

Young people (16 to 25 years) have the highest rates of mental health disorders in Australia, with 26% reporting a depression, anxiety or substance use disorder in the past year. Internationally there is consensus that mental health is *more than the absence of mental ill-health/disorders*. The World Health Organisation defines mental health as “… a state of wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her own community” (2001, p.1). Thus, to actively improve mental health, it is important to look beyond mental ill-health, to the notion of wellbeing or positive mental health.

This project is based on Keyes’ Complete Model of Mental Health which conceptualises mental ill-health and mental wellbeing as representing two separate continua rather than the opposite ends of the same continuum. Mental wellbeing, is comprised of (i) emotional wellbeing (positive affect, quality of life, life satisfaction); (ii) psychological wellbeing (self-acceptance, purpose in life, personal growth) and (iii) social wellbeing (social acceptance, social coherence, social actualization). Thus, to actively improve mental health, it is important to simultaneously promote the mental wellbeing of young people, while seeking to prevent mental ill-health and disorders in young people.

Positive mental health promotion programs have enormous potential to prevent the development of mental health problems. Gains in mental wellbeing based on Keyes’ model predict declines in mental illness, while losses in positive mental health predict greater mental illness over a 10-year follow up. However, less than a quarter of young people with mental health disorders seek help, and those in the emerging stages of mental health problems are even less likely to do so.

**Modern technology offers a significant opportunity**

To succeed in improving the mental health of young people, service providers and mental health promotion campaigns need to engage with young people in environments where they interact.

Internet access among young Australians has now reached 100% saturation and over 90% own a smartphone and regularly download mobile apps. Young people report feeling comfortable accessing online information about mental health issues, and the anonymity of online interventions extends access to young people who would otherwise avoid services.

The sheer penetration of smartphone use and apps, offers an unprecedented opportunity to provide real-time standardised health information/promotion and treatment directly to individuals in their natural environment. This not only has the potential to rapidly increase access to health promotion materials, but may also result in population level improvements in young people’s mental health and wellbeing.
eHealth programs (eTools) not only offer the opportunity to provide anonymous, 24/7 free access to high-quality and effective programs targeting the mental health and wellbeing of young Australians, but also offer innovative, cost-effective strategies for reducing government mental health-related expenses.

Considering the effectiveness and wide acceptability of the eTools, this research program will result in significant social, health and economic benefits for Australia by dramatically increasing current knowledge on how online positive mental health eTools can best be utilized to increase the emotional, psychological and social wellbeing of young people and reduce their risk of mental health problems. The eTools are the first of their kind internationally, and have the potential to improve the mental health and wellbeing of youth on a global scale.

2.2 Evidence of innovation and/or recognised best practice.

Identification of target areas
The first step involved the identification and review of the quality and effectiveness of existing mental health and wellbeing apps. However, the lack of previous research in this area required the development of new research methods to achieve this. A new web-based search engine was first developed to search iTunes and Android app stores, due to the lack of common eHealth databases available. Best practice guidelines for conducting systematic literature reviews (PRISMA) were also translated to develop effective practices for conducting and reporting the results of app reviews.

Six target areas for eTool development were identified based on important gaps in the mental health apps currently available or the presence of low-quality, faulty or even potentially harmful apps in a particular area.

The eTools

1. The Mobile Application Rating Scale (MARS)
While there are more than 100,000 health-related apps (free and paid) publicly available, little information is available on their quality beyond ‘star’ ratings and consumer reviews. This led to the development of the Mobile App Rating Scale (MARS), a new scale for rating the quality of health-related mobile applications.

The MARS is the first tool for consistently and objectively classifying and rating the quality of mobile health apps. It serves as a safeguard for end users and a valuable tool for guiding the selection and future development of high quality apps for health practitioners, researchers and industry professionals.

A comprehensive literature search was conducted to develop the MARS. Six databases and three key websites were searched to identify journal articles on the assessment of app or web quality from January 2000 through to January 2013. Twenty-five publications were identified and 372 criteria app or web quality were extracted. An expert team of psychologists, designers and developers worked together to classify assessment criteria into categories and sub-categories, and develop the scale items and descriptors. The resulting MARS consisted of six
categories: one relating to app classification, four app quality scales (engagement, functionality, aesthetics and information quality) and a satisfaction scale.

The MARS was tested on 50 mental health and wellbeing apps by two expert raters and was found to have excellent levels of internal consistency and inter-rater reliability. It was concluded that the MARS scale can be applied with confidence across a wide range of health-promoting mobile apps.

The MARS is the first app-quality assessment tool of its kind. It provides a valuable tool for evaluating the quality of mobile health apps that will be used to inform future policy and regulations related to the use of health-promoting apps.

An app user version of the MARS has also been created to enable young people and other end users to provide feedback on the quality of health-related apps.

Free online MARS training is available at: https://www.youtube.com/watch?v=jB2HRhCVX2Y&list=PLnqaT8j--k62o9fuFsumYKJzLVfiASmnP

2. Ray’s Night Out
Binge drinking is an intrinsic part of Australia’s youth culture. Almost 50% of young Australians drink at hazardous levels at least monthly, with 23% binge drinking at least weekly. This is problematic, as binge drinking more than doubles the risk of injury in young people, and the rate of alcohol-related violence doubled in Australia between 2007 and 2010. While an increasing number of apps targeting alcohol use have been developed, the majority track alcohol use and estimate blood-alcohol level concentrations (BACs).

We worked with young people to identify how an app could be used to target risky drinking in young people. In a series of PDWs young people were asked to trial a number of alcohol monitoring apps. They reported finding the alcohol monitoring apps difficult to use and boring. They wanted a more engaging and interactive youth-friendly app, that utilized a harm minimization approach to promote safer drinking practices, increase awareness of drinking limits and helped them identify their stupid line for drinking (the point where a good night out start to go wrong). They also expressed a preference to engage with an app-character, resulting in the development of the Ray avatar.

Users can take Ray for a “fun”, “relaxing” or a “crazy” night out. They can buy him food and alcoholic and non-alcoholic drinks; can let him dance, flirt and relax; and can play bar trivia teaching them harm-minimisation strategies about alcohol and fun youth-relevant facts. Visual feedback is provided on Ray's level of alcohol consumption, the physical effects of alcohol on Ray’s demeanor (e.g.: hiccups, swaying) and appearance, as verbal prompts (e.g.: “I think I’m pretty drunk”). If the user keeps buying Ray drinks and he goes over his stupid line he will vomit and then pass out if given more alcohol.
3. **Music eScape**

Emotion dysregulation is an important risk factor for a wide range of mental health problems in young people. Music evokes a range of positive and negative emotions and is the most popular leisure activity among young people. The sheer popularity of music and mobile apps in young people indicates a music app may provide the ideal medium for an emotion regulation intervention in young people.

We worked with young people to identify how music influenced their emotions. We found it helped them identify, express, enhance and manage their emotions. They also coined the term ‘mood journey’ to describe the planning and progression of emotions facilitated by music.

The ‘Music eScape’ app is the first app that allows users to change their mood using music. The app scans and mood-tags the users’ own mobile music library. The user is presented with a mood map of their music to help them identify the prevalent moods of their music library. The app prompts users to reflect on their current and desired mood, and then encourages them to plan a mood journey using their music. Following completion of the mood journey the user is asked to reflect on their current mood and the success of their mood journey.

4. **Keep it Real**

Psychotic-like experiences (PLEs) are common subclinical psychotic symptoms, reported by up to 28% young people. They are a risk factor for a range of mental health problems, including depression, anxiety and psychotic disorders.

Cannabis is the most commonly used illicit drug, particularly among young people, during the peak age of onset for psychosis (15 to 25 years). A recent meta-analysis found a 40% increase in the risk of psychotic symptoms among people who had ever used cannabis and 2.6 times the risk of developing a psychotic disorder. Up to 90% of young cannabis users report PLEs.

We worked with young people to develop the first web-based program targeting PLEs in cannabis users. Keep it Real is a brief program for young cannabis users with PLEs that aims to (i) improve users’ ability to identify and understand PLE’s and reduce associated distress, (ii) increase understanding of the relationship between PLEs and cannabis use, and reduce cannabis use (iii) teach relevant coping strategies including mindfulness, problem solving, cognitive restructuring and behavioural activation, and (iv) facilitate appropriate help-seeking (when required).

5. **Game On ‘Smiling Mind’**

This eTool was based on the proliferation of new research highlighting that mindfulness training is an effective tool in maintaining and improving wellbeing. Training programs are increasingly administered in online format. While showing improved retention compared to traditionally-administered programs, issues of attrition and engagement are still a concern.

Gamification can engage users in health-related apps and websites. Elements of gamification can include offering points systems or rewards for regular use, keeping leaderboards, and social network integration to provide competition. Limited
evidence exists of the gamification elements are most successful at increasing engagement.

The integration of gaming features to treatment websites is bolstered by findings of enhanced psychological wellbeing in game players. We have found videogames offer players satisfaction of their need for feelings of competence, autonomy and relatedness, which leads to lasting improvements in positive affect, post-play energy, life satisfaction and self-realisation in our previous research.

Working with ‘Smiling Mind’ (http://smilingmind.com.au/), one of the most popular mindfulness training websites in the world, this project will determine if the gamification of the website increases engagement, reduces attrition and improves outcomes.

6. Breakup Shakeup
The stage when romantic relationships come to an end (‘breakup’) has been linked to a range of adverse psychological and psychosocial impacts in adolescents. Breakups have been linked to an increased risk of depression, self-harm, suicidal thoughts and/or suicide attempts as well as increased psychological distress, risk-taking behaviour and poor functioning in future relationships. Concerns regarding romantic relationships, particularly breakups, consistently feature in the top five reasons why 50,000+ young people (5-25 years) contact Kids Helpline for counselling support each year. Despite the salience and severity of breakups among young people, few publicly available web or mobile-based programs for relationship breakups in young people are available.

For this project we conducted a series of five PDWs with young people and collaborated with Kids Helpline to develop an app aimed at helping young people recover after a distressing breakup. The ‘Breakup Shakeup’ app utilises a behavioural activation approach to help teach young people obtain social support and learn new coping strategies to help them recover from a breakup.

2.3 Evidence of participation of mental health consumers, in the planning, implementation and evaluation as relevant.

This entire project has been built with mental health consumers in mind. Young people have been engaged from the onset in all stages of the conceptualisation, design, development and evaluation of the eTools. Across the five eTools we have conducted 14 PDWs with groups of 5 to 8 participants. Approximately 1200 young people have participated in the RCTs that evaluated the effectiveness of the eTools.

eTool Conceptualisation and design
At least two participatory design workshops with young people were conducted to conceptualise and design each eTool. Participants were asked to operationalise their understanding of the target area, explore what they thought might help address it and how technology could assist this. Existing eTools were trialled by the young people, and they were asked to comment on their level of engagement, navigation, aesthetics, as well as their overall level of satisfaction with the eTools.
The second workshop primarily focused on identifying the desired features of the eTool. The ideas and designs generated by the young people were compiled and presented to a multidisciplinary team consisting of designers, psychologists, and app developers. Agile development methods were then used to develop the eTools, whereby the development of each eTool was broken into small iterations of work that typically last from one to four weeks. Each iteration involved the team working through a full software development cycle including planning, requirements analysis, design, coding, unit testing and evaluation. Young people were also involved throughout this process to ensure the eTools were youth friendly and engaging.

**eTool testing and end-user consultations**
One to two prototype-testing sessions were held with young people, once the initial prototype of each eTool was developed. Users were encouraged to explore the eTools without any direction from the team, replicating a real-life situation. The testing sessions were audio and video recorded to ensure detailed feedback on the acceptability, youth appeal, relevance, usability, functionality, likely impact and uptake of the eTool was collected. Young people were also asked to provide MARS ratings on each app. Their feedback has led to numerous corrections and improvements in the content, design, usability and functionality of the eTools.

**eTool evaluation and dissemination**
The effectiveness of all eTools developed as part of the Etools for Wellbeing project were evaluated in RCTs. This involved approximately 1200 young people across five trials. At each follow-up point participants were asked to provide qualitative feedback on the initial and ongoing experience of using the eTools. These eTools are now available for public use.

**2.4 Evidence of Partnerships and Linkages (collaboration for continuity between organisations).**

Collaboration is one of the cornerstones of the eTools for Wellbeing project. The background research, contextual reviews and implementation of user input has all been conducted with the help and expertise of numerous partners, experts and organisations within and outside of the CRC.

**The Mobile Application Rating Scale (MARS)** was designed with the help and expertise of IT professionals, researchers, psychologists and designers from Queensland University of Technology and the Inspire foundation (USA, Australia). The official publication of the scale and its presentation on two Australian and two international conferences to date has sparked overwhelming interest and numerous international collaborations. The Inspire foundation has used the scale for the selection of the highest-quality mental health and wellbeing apps to be featured in ‘The Toolbox’ [https://yawt.youngandwellcrc.org.au/toolbox/](https://yawt.youngandwellcrc.org.au/toolbox/). Lifehack [http://lifehackhq.co](http://lifehackhq.co) from New Zealand have utilised the scale to ensure the quality of the eHealth apps and products they are creating.

**Ray’s Night Out** was conceptualised, designed and developed with the support of representatives from the Centre for Youth Substance Abuse Research at QUT and the University of Queensland ([http://cysar.health.uq.edu.au/](http://cysar.health.uq.edu.au/)), the Hot House youth alcohol and other drug (AOD) service, Dovetail, which clinical advice and
professional support to the youth AOD sector (http://dovetail.org.au/about-us.aspx) and the Adolescent Drug and Alcohol Withdrawal Service (ADAWS).

**Music eScape** was designed in collaboration with clinical psychologists from QUT and music experts from University of Queensland and Griffith University. The app was developed in partnership with the Echonest, owned by Spotify and supporting music-mood evaluation for iTunes and MTV. Future partnerships are currently being developed with the University of Melbourne and the Shell International Wellbeing team. Our team has received numerous invitations and inquiries for future collaboration as a result of the media coverage on the app and its presentation at three Australian and two international conferences.

**Keep it Real** was designed in collaboration with the Centre for Youth Substance Abuse Research at QUT and the University of Queensland (http://cysar.health.uq.edu.au/) and Mirikai, the Gold Coast Drug Council (now Lives Lived Well http://www.liveslivedwell.org.au/default.htm), an AOD withdrawal unit. One of the PDWs was conducted at Mirikai. Recruitment for the RCT also involved these agencies.

**Gamified ‘Smiling Mind’** was conceptualised and designed in collaboration with The Smiling Mind. The potential positive impacts of the videogames were collected through a comprehensive review of existing research in the area involving collaborators from QUT, the University of the Sunshine Coast and John Hopkins University.

**Brakeup Shakeup** was conceptualised, designed and developed in collaboration with Boystown, Kids Helpline and the Young and Well CRC. An interdisciplinary team involving psychology, relationship design, gamification and marketing, experts from QUT were involved in the project.

**Verification and evaluation of the program's effectiveness**

The eTools have been evaluated by young people, the QUT team and our collaborators at every step of the design and development process. All eTools also underwent prototype testing to check the functionality, usability, information quality, visual and youth appeal of the apps. They were then tested in RCTs to determine their impact on the target area.

The results to date have been impressive.

A paper describing the development and testing of the MARS has been published in the prestigious Journal of Medical Internet Research (JMIR) and has 35 citations to date. The MARS scale was used in a large number of projects during the one year since its publication. It has been requested by 59 researchers and teams worldwide and has been translated into Portuguese, Italian, Dutch and Korean. We are aware that it is currently being used in studies relating to apps for smoking, mindfulness, wellbeing, health, music, emotion regulation, drink driving, nutrition and exercise. A simplified, user version of the scale (uMARS) was also developed and tested by our team. The uMARS was used in our RCTs and can freely be implemented in app evaluation studies with end users.
The MARS has received the following rewards and commendations:
2014 VicHealth Communications in Health Promotion Award
2014 Best Poster, The International Society for Research on Internet Interventions (ISRII) conference
2015 ANZIA Internet Awards (one of 3 nominations)
2015 TheMHS Mental Health Promotion or Mental Illness Prevention Commendation (2015)

The ‘Ray’s Night Out’ app was tested with 197 young people to determine if it helps reduce alcohol-related problems and increases alcohol-related knowledge in a 6-month randomised controlled trial (RCT). The efficacy of Ray’s Night Out was assessed at one month follow up only. Young alcohol users in the immediate app access group had significantly higher alcohol knowledge scores at one month follow up, than those in the delayed access group. No other between group differences on alcohol use or related harm were found.

The impact of ‘Ray’s Night Out’ on alcohol use and related problems was assessed in both groups at two, three and six months follow-up, compared to baseline. Significant reductions in the average number of typical and maximum drinks consumed on one occasion were found in both the immediate and delayed access groups at two and six months follow-up. Reductions in the number and frequency of alcohol-related problems (RAPI) were found at two, three and six months follow up, relative to baseline. The proportion of young people with no alcohol related problems increased from 24.9% at baseline to 39.7%, 39.0% and 48.1% at two, three and six months follow up respectively. A significant reduction in the severity of harmful alcohol use assessed using the Alcohol Use Disorders Identification Test (AUDIT) was also found between baseline and six months follow up.

The ‘Music eScape’ app was trialled in an RCT with 164 young people. Most participants agreed that the app helped to improve their mood. They also agreed that it helped them identify their moods and the connections between mood and music. After one month of app use, the app received a mean uMARS “Good” rating of 3.8 (SD=0.6) out of 5, suggesting that it will be well-received by prospective users. Young people reported the app had good levels of engagement, aesthetics and information quality and acceptable levels of functionality.

At 1-month follow-up improvements were evident for both groups on all outcomes measures. Emotion regulation difficulties were reduced in five out of six domains measured. Similarly mental health and well-being, measured with three scales, was significantly improved at all time points subsequent to baseline. Music eScape sparked a vast media interest. There have been publications in the Sydney Morning Herald and the Business to Community, and a television report by the BBC along with radio interviews in Brisbane, Melbourne, Sydney, Townsville and Darwin.

Ray’s Night Out and Music eScape were featured in the top 10 health apps on Buzzfeed.

The ‘Keep it Real’ program trial results indicated that the app helped young people make sense of and better manage their experiences. An RCT was conducted with 226 young people to explore the efficacy of the program. In this sample, 74.1% rated the program as ‘pretty good’ or ‘excellent’, demonstrating that the tool is well accepted and likely to be utilised by young people. Cannabis use significantly decreased between baseline and 3-month follow up. PLEs also decreased at 3- and 6-month follow up which may be a function of reduced cannabis use or other
external factors. Cannabis knowledge continuously improved over this 3-month period with the immediate group showing a higher increase in knowledge, compared to the delayed group during the first month. Participants qualitative feedback of the program was overwhelmingly positive.

The ‘Smiling Mind’ program was trialled in an RCT with 263 young people. The Gamified version of the program received higher ratings than the Non-gamified version on all uMARS subscales, however none of the rating differences between the two groups were significant. Both program versions were rated as ‘Good’ overall quality. They presented with good levels of engagement, functionality, aesthetics and information quality. The Gamified version of the program was perceived as more effective, yet most participants agreed that both versions of Smiling mind would prompt them to change their attitude and behaviour to practice mindfulness. A range of measures of Mental wellbeing, mental ill-health symptoms and aspects of mindfulness we employed. Participation in the trial was associated with improvements in all measures of mental wellbeing and mental ill-health symptoms, and most aspects of mindfulness. Group differences, however, were not significant. Rather, improvements were evident for all groups. This is likely to be due to assessment effects in which asking participants to evaluate their level of mindfulness increases mindfulness.

The results of the ‘Breakup Shakeup’ RCT are currently being analysed. Preliminary data show that participants had significantly reduced levels of suicidality and post-breakup distress. Participants' levels of wellbeing increased significantly during the trial. Most importantly, the app was effective in increasing participant activation levels, suggesting that the main premise of ‘Breakup Shakeup’, which is based on behavioural activation theory, was effective.

3 Conclusion

The eTools for Wellbeing project designed, developed and tested the effectiveness of six positive mental health eTools (apps, websites) targeting the mental health and wellbeing of young Australians. The eTools were developed by young people for young people using participatory design workshops and agile development processes to ensure they had a high level of youth appeal. The eTools were rigorously tested and are now freely available.

From the beginning it has been clear that such an ambitious and complex project required the assistance and expertise of numerous partners. We believe that our partnerships with the Young and Well CRC, it’s 75 partner organisations and other youth relevant organisations and experts has played and continues to play a key role in the success of this project.

The success of these partnerships, the positive user-feedback and promising initial results of the eTools for Wellbeing project indicate we are likely to achieve our goal of increasing young Australians’ access to high-quality, youth friendly and effective eTools for enhancing their mental health and wellbeing. The sheer penetration of smartphone use and apps in young people highlights the potential of this project to result in population level improvements in young people’s mental health and wellbeing on a global scale.
4 Referees:

Removed for privacy

5 Appendix of Support Material:

Appendix 1 The Mobile Application Rating Scale conference poster  Appendix 2 Ray’s Night Out screenshots and description  Appendix 3 Music eScape: Participants’ initial design suggestions from PDWs  Appendix 4 Music eScape screenshots and description  Appendix 5 Keep it Real screenshots  Appendix 6 Breakup Shakeup screenshots  Appendix 7 Music eScape article published by the Sydney Morning Herald
The Mobile Application Rating Scale conference poster which won one of five "Poster-excellence" awards at the ISRII conference, Valencia, Spain, 2014.
Appendix 2
Ray's Night Out screenshots and description

Let's have a great night out! All you need to do is keep me under my stupid line for drinking - the point where I start to get a bit messy.

Alcohol can be detected in your blood after 5 minutes of drinking.

TRIVIA

True
False

Hey, I had a great night!
Drinking water and eating early in the night really helped me stay under my stupid line.
Can you guess where my stupid line was?
**App description**
Take Ray the Red Panda for a night out!
Buy him drinks and food, make him dance and flirt and play bar trivia.
Collect good vibe points to unlock rewards and take selfies.
But take good care of Ray, don’t let him cross his ‘stupid line’ for drinking – you know – the point where a good night out turns bad.
Most of all have fun while you learn to identify your own stupid line for drinking.

**About the study**
Ray was developed with young people aged 16-25 years by the Queensland University of Technology (QUT) as part of the Young and Well CRC.
We first worked with young people to try and understand what a good versus bad night out was like for them. Young people were able to identify a point in their alcohol consumption where a good night out starts to turn bad and results in negative consequences. A point they termed their “stupid line” for drinking.
Young people trialled a number of alcohol apps designed to help track their alcohol use. They found these apps difficult to use and boring. They wanted a more engaging and interactive youth-friendly app, which utilized a harm minimization approach to promote safer drinking practices, increase awareness of drinking limits and help them identify their stupid line for drinking. They also expressed a preference to engage with an app-character, resulting in the development of the Ray avatar. That’s how Ray was born.
Appendix 3
Music eScape: Participants' initial design suggestions from PDWs
Do happy songs annoy you when you’re feeling angry? Ever wondered why you feel depressed when you listen to dark music?
Music can have a powerful effect on our mood. We use it daily whether we are happy, angry, bored or depressed. It gives us energy when we work out and it helps us wind down.
Music eScape, powered by the Echo Nest, lets you:
* create a mood map of your music library
* develop dynamic playlists to match your music to your mood
* create or select a music journey to express, enhance or change your mood
With just the swipe of a finger you can draw a music journey from how you currently feel to how you want to feel.

About the study
Music eScape was developed by Queensland University of Technology in collaboration with the Young and Well CRC, the University of Queensland and young people.
We first worked with young people to try and understand how they use music to influence their mood. Young people described using music to express, enhance and change how they feel. They used dark music to express sadness and anger and happy high tempo music to feel good. When feeling depressed, some young people used happy music to cheer themselves up, while others preferred to listen to sad music first before moving toward more happier music.
Music escape can help young people use music to influence their emotions in all of these ways.
Appendix 5
Keep it Real screenshots
Appendix 6
Breakup Shakeup screenshots (previously named “LoveBites”/”Elastic Heart”)

Work, life, family, girls, boys - relationships. Sometimes it all just gets a bit much, eh?

We can’t fix it all. But we can have a crack at making it better.

Pick how you’d like to feel instead.

When did you want to do it?

We get it. Sometimes you just want to feel better. These activities can help.

- Listen to soothing music
- Do a family activity
- Get a massage
- Hook up with someone else
- Say’s positive things to yourself
- Go for a swim
- Make a cup of herbal tea
Researchers' app quest to help teens beat mood swings

Researchers from Queensland are using music to help mood swings. Australian researchers are aiming to fix teenagers' notorious mood swings with something they already have in their pockets.

They've created a smartphone app that lets users 'map' their moods to specific music. The app then generates a customised playlist based on the user's moods. The app is based on the 'valence and arousal' model of emotion.

The Music eScape iPhone app analyses and categorises songs in the user's library according to their emotional characteristics – such as 'chilled' or 'aggressive', 'happy' or 'depressed' – and then matches them to the user's journey.

It was developed with the Young and Well Co-operative Research Centre as part of its e-Tools for Wellbeing project. Associate Professor Hodes said it was designed to help young people build awareness of their mood and change it.

The app is free and available on the App Store.