

# Reach Out Central: a serious game designed to engage young men to improve mental health and wellbeing

Jane M Burns, Marianne Webb, Lauren A Durkin and Ian B Hickie

Young men in Australia have higher rates of completed suicide, antisocial behaviour, and drug and alcohol problems than young women.<sup>1</sup> They are also less likely to seek help during the formative adolescent and young adult years, with results from the 2007 National Survey of Mental Health and Wellbeing indicating that only 13% of young men aged 16–24 years seek help when experiencing mental health difficulty.<sup>2</sup> These figures are at odds with findings suggesting that most young people: know someone experiencing depression and can therefore identify the symptoms of the illness;<sup>3</sup> are aware of evidence-based treatments; and can recognise the helpfulness of exercise, brief psychological therapies, medication and counselling, as well as the harmfulness of alcohol or illicit substances.<sup>4</sup>

The factors associated with poorer health outcomes for young men are complex, and research has shown that young men may have more problems because they fail to seek help, are not engaged with services or health information materials, or lack the knowledge needed to make informed choices.<sup>5,6</sup> While male behaviour is seen as “problematic”, this narrow, individualistic view fails to acknowledge the settings in which young men spend time or the activities in which they engage. Rather than trying to “re-educate” young men, greater focus should be placed on providing health services that are relevant and meet their needs.<sup>7,8</sup>

In Australia, 92% of 15–17-year-olds and 90% of 18–24-year-olds use the internet.<sup>9</sup> International literature suggests that young people are extensive consumers of digital media and users of digital devices, including video games.<sup>10</sup> Young people report that anonymity, accessibility, empowerment and delivery modality are important in their online interactions.<sup>11–14</sup> In particular, anonymity makes the internet an important setting for addressing the complex needs of young men, specifically poor mental health literacy and negative attitudes to help seeking.<sup>15–18</sup> A study in the United States found no significant differences in the prevalence of internet help seeking between the sexes, suggesting that young men are just as likely as young women to use the internet as a source of support.<sup>12</sup>

Here, we describe the concept, development and evaluation of Reach Out Central (ROC), an internet-based “serious” game designed to improve the mental health and wellbeing of young people, particularly men.

## The development of Reach Out Central

ROC is one of the five elements of Reach Out (<http://www.reachout.com>), a web-based service that aims to improve the mental health and wellbeing of young people aged 14–25 years. The Reach Out platform also includes user-generated content, online facilitated forums, self-expression, and portable digital media. The elements continually evolve based on the needs of young people, advances in technology and clinical evidence used to inform the program.<sup>19</sup> Young people have been directly involved in the development and delivery of the service and, in the 2007–08 financial year, it recorded 1.3 million unique visits.<sup>19–21</sup> Despite its significant reach, online profiling suggests that the service is not attracting young men, with less than 20% of Reach Out users being male.<sup>22</sup> In 2002, young

## ABSTRACT

- Reach Out Central (ROC) is a serious game drawing on the principles of cognitive behaviour theory that has been designed to improve the mental health and wellbeing of young people, particularly men.
- ROC was developed over a 3-year period from 2003 to 2006, in consultation with young people aged 16–25 years who use the Reach Out mental health website (<http://www.reachout.com>).
- ROC was launched online in September 2007. A traditional and viral awareness campaign was designed to engage young men, particularly “gamers”.
- In the first month after launch, ROC had 76 045 unique website visits, with 10 542 new members (52% male) joining Reach Out.
- An independent online evaluation involving 266 young people aged 18–25 years was conducted between August 2007 and February 2008 to examine psychological wellbeing, stigma and help seeking in ROC players. Overall results indicated that ROC was successful in attracting, engaging and educating young people. Young women reported reduced psychological distress and improved life satisfaction, problem solving and help seeking; however, no significant changes were observed for young men.
- Although ROC was successful in attracting young men, demonstrating that the concept resonates with them, the service failed to keep them engaged. Further research is needed to explore how (or what changes need to be made) to sustain young men’s engagement in the game.

MJA 2010; 192: S27–S30

people were consulted to discuss innovative ways of engaging young men. The group suggested popular video games such as Grand Theft Auto and Tomb Raider as examples on which a game about mental health could be based.

## The theoretical underpinning

A serious game is a video game that uses computer-based entertainment technology to teach, train, or change behaviour.<sup>10</sup> The development, implementation and evaluation of gaming technologies applied to health-related conditions was discussed at the inaugural Games for Health Conference in 2004. Resulting recommendations for game design included the need for enhanced self-concepts, improved self-efficacy, increased knowledge and skills, increased communication and social support, empowering individuals to take action in regards to their own health, a multidisciplinary approach, and a regard for ethical issues.<sup>23</sup> Other serious games such as Food Force and Re-Mission show great promise (Box 1).

A comprehensive model of learning for behaviour change in video games is based on social cognitive theory and the elaboration

### 1 Examples of serious games

- Food Force is a game designed by the United Nations World Food Programme to educate young people about world hunger and the agency's work. The free online program, in which users engage in humanitarian missions delivering food to emergency areas, has been downloaded more than five million times.<sup>24</sup>
- Re-Mission (HopeLab, Redwood City, Calif, USA) is a psychoeducational game that aims to educate players about cancer and improve self-care skills in players who have cancer. A randomised controlled trial demonstrated significantly larger increases in knowledge about cancer for participants who used Re-Mission compared with those in the control group, who played a commercial video game.<sup>25</sup>
- A meta-analysis of 25 video games designed to increase knowledge and change attitudes and behaviour in regard to health conditions such as obesity, diabetes or asthma found positive health-related outcomes as a result of playing the games, despite varied research methods.<sup>10</sup> ◆

likelihood model. Social cognitive theory proposes that behaviour change is a function of enhanced skill and confidence (self-efficacy) in doing the new behaviour, while modelling and feedback are keystones for learning skills. The elaboration likelihood model proposes that gaining and maintaining a person's attention is the first step in getting the person to process the information in a message to promote behaviour change.<sup>10</sup>

In addition to behaviour change principles, the storylines and modules of ROC were developed by drawing on the principles of cognitive behaviour theory (CBT) and were based on a schools-based intervention with demonstrated effectiveness, "Adolescents Coping with Emotions".<sup>26</sup> The adaptation and use of CBT in schools-based interventions delivered via classroom curricula show promising results.<sup>27,28</sup> Theoretically, it seemed logical to combine the principles of social cognitive theory, the elaboration likelihood model and CBT in a translational research delivery model that appealed to young men.

### How ROC works

Although ROC is part of Reach Out, it is located on a separate website (<http://www.reachoutcentral.com.au>) with a distinct navigation style designed to appeal to young men. ROC is not a structured treatment; rather, the objectives of the game are to teach life skills, such as communication, problem solving and optimistic thinking, in a virtual setting using real-life scenarios.

ROC is a single-player game, and when a player logs in, he or she is asked to complete a short survey that measures positive affect, allowing the player to track his or her mood over time. The player's in-game mood is affected by activities and how he or she responds to other characters and situations. The aim is to encourage young people to recognise that there are simple and effective strategies for improving their mood (eg, sleep increases energy and relaxation, while studying increases confidence and decreases energy). Players also get tips sent to their mobile phones by text message and links to fact sheets on the Reach Out website.

When the game begins, the player is presented with a scenario of having just moved to a new town. He or she interacts with a set of non-playing characters (Box 2) through different plots and progresses through the game by choosing responses from a series of options. Plots are discrete storylines that usually involve up to five

characters (Box 3). The plots may have outcomes that affect the player's moods or the friendship ratings of various characters, or may allow the player to gain items or money, which are all dependent on the player's choices during interactions with other characters. The player can significantly affect the events during a particular plot but the ultimate outcome is predetermined. The purpose of the plots is to present real-life scenarios that allow young people to make choices, see the consequences of their choice, and learn from them. Several key themes are explored, including mental health difficulties such as depression and drug and alcohol use, while underlying themes are also explored, such as relationship problems, bullying and victimisation, grief and loss, family relations and managing money.

### Marketing campaign

The ROC marketing campaign was specifically designed to appeal to young men, and marketing materials were created to appeal to "gamers". Advertorials were posted on six gaming, entertainment, social and community youth websites. Specific male youth-oriented magazines were targeted, including *Zoo Weekly*, *Alpha*, *Waves*, *Rolling Stone*, *XBox* and *FHM*. The campaign was advertised in print and the popular press, including 1500 bus and tram interior advertisements nationally, and was picked up nationally by metropolitan, suburban and specialty newspapers, radio stations and television networks. Music was included in the game plan, and Australian artists contributed tracks.

### Preliminary results

#### Site uptake and external recognition

In the first month after its launch in September 2007, ROC had 76 045 website visits, with 10 542 new members joining Reach Out. Fifty-two per cent of new members were male, suggesting that advertising campaigns had reached the target audience. When filling

### 2 Examples of Reach Out Central non-playing characters



Jason comes across as the cool guy in town but, underneath it all, he's pretty angst-ridden. It could be the pot, as it's his number-one vice. Jason is into his electro music and spends hours sampling tracks. You should hang out with him some time, he's got a great set-up at his place.



Trish is a bit of a loose cannon. She's super friendly and outgoing and used to have a good head on her shoulders, but lately her mates have become concerned for her. She's always got a few boyfriends on the go at once and seems to spend half her time out partying. She's just moved into a share house and could make more of an effort getting to know her flatties.



Davo is a pretty straight-up guy. He's a good mate, fairly uncomplicated and will always crack you up about nothing. He's an eternal optimist and reckons there's nothing you can't solve with a good surf. You should meet him some time! ◆

### 3 Examples of Reach Out Central plots

#### New Kid in Town/Tim Teased

This plot introduces the player to all the characters of the game and many of the locations, sets up many later plotlines indirectly, and feeds into the plotlines that follow directly on from this one.

The player has just arrived in town and is invited out by his/her cousin Chris, who introduces the player to his friends Davo, Kate, Anne-Marie and Trish. The player is also tangentially introduced to Tim, who is the subject of some light teasing by Chris and Davo. Trish invites the player to her housewarming party, setting up the second part of this introductory plot.

#### Housewarming

When the player arrives at Trish's housewarming party, none of the people the player has met (apart from Trish) have arrived yet, and the player is faced with the prospect of talking to strangers. He/she has the opportunity to meet Jason, Jules, TJ, Tim and Mia.

#### Ill Communication/Party Girl

Kate confides in the player her concern that Chris doesn't seem to be communicating with her much these days. She figures that Chris must mostly talk to his mate Davo. However, if the player asks Davo about it, he/she will find out that Chris is similarly withdrawn from him. This provides hints of Chris' increasing withdrawal from others and his eventual suicide attempt.

Kate also reveals that she's concerned about Trish's recent behaviour, going out partying and taking drugs with an older crowd, and being quite promiscuous.

#### Panic Attack

The player finds out from Anne-Marie and/or Trish that Kate was "acting weird" at the mall. She actually suffered a panic attack, brought on by massive stress. The player can talk to Kate and find out more about what's going on beneath Kate's confident exterior. ♦

and help seeking.<sup>29</sup> No significant changes were observed for young men; however, the recruitment of young men in the study was low and subsequent loss to follow-up was substantial. Of the 266 participants at baseline, only 88 (33%) were male and, at follow-up, 22 had dropped out. The study authors concluded:

Although not a reflection of real-life usage trends (males comprise 46% of ROC hits since launching), the power to detect significant changes in this study was considerably reduced. Furthermore, it also meant that a valid statistical comparison between male and female data was not possible.<sup>29</sup>

### Potential uses and improvements

Although ROC was successful in attracting young men, demonstrating that the concept resonates with them, the service failed to keep them engaged. The need to determine exactly how or what changes need to be made to the game to sustain young men's engagement is currently being explored under the auspice of an Australian Research Council Linkage Project grant. Specific areas of research include differences in the uptake and use of technology between the sexes, and questions relating to gaming, such as the genre, delivery style and type of platform that appeal to young men (eg, mobile phone versus game console versus computer).

The results of the external evaluation, coupled with the shift from "Web 1.0", which had a focus on knowledge transfer and real-time information flow, to "Web 2.0", which has a focus on participatory online communities and user-generated content, highlights ways the game could be strengthened. It also raises some interesting research questions in relation to the measurement of psychological change in young men using internet tools.

### ROC as a health promotion tool

While ROC is a single-player game, it is possible to use it to provide direct links to online and offline mental health resources and services and to create online communities within the Reach Out website for discussing game play. These could have a focus on promoting community participation and building social connectedness, both protective factors with a positive impact on mental health. Resources promoted through the game could include: an online diary where players keep track of scenarios to try or stories of their success in applying learned skills in their day-to-day life; direct links to fact sheets about professional services (eg, letting young people know that Medicare covers 12 free counselling sessions) to promote help seeking offline; online health records to promote consumer-driven wellbeing management; and virtual tours of youth mental health services. In their online communications, young people could share stories about their experiences with ROC (eg, how they have used the game or how it has helped them with real-life experiences), and share game tips and provide encouragement to the community of players. Evaluation should focus on measuring accurate user numbers and interactivity across resources, longitudinal tracking to measure online and offline interactions, and qualitative content analysis of young people's stories to determine the capacity of the game to build online communities.

### ROC as a clinical tool

Minimal research has been done that explores how young people interact with existing and evolving technology, and how it can be used in a clinical setting to promote engagement and facilitate illness management. Reach Out Pro (<http://www.reachoutpro.com.au>) was

out the Reach Out member sign-up page, new members are asked to indicate where they heard about ROC. New members reported having heard about ROC via a link on another website (23%), a magazine, bus or tram advertisement (11%), through their school, university or youth centre (7%), through an internet search engine (4%) or by word of mouth (4%). Smaller proportions of new members heard about ROC from their counsellor or family doctor, a postcard or poster, on the radio or at a youth event. Forty-one per cent did not respond to the question.

Online advertising delivered 49% of website visits to the ROC game landing page and 19% of all visits to the Reach Out member sign-up page. The best performing sites were Miniclip, Bored of Studies, Bebo, Piczo and Ad2One Youth and Entertainment. The overall "click-through" rate from online advertising was 1%, which is five times the industry average for a comparable online campaign.

### External evaluation

An external evaluation of ROC involving 266 young people aged 18–25 years was conducted between August 2007 and February 2008 by Swinburne University of Technology.<sup>29,30</sup> The study was a single-group, quasi-experimental design with repeated measures of psychological wellbeing, stigma and help seeking (pre-game play, post-game play, and at 2-month follow-up). Overall results were consistent with the interpretation that ROC was a successful way of educating, attracting and engaging young people.<sup>30</sup> Psychological distress scores for young women significantly reduced over time, and they reported improved satisfaction with life, problem solving

launched in March 2009, with the aim of providing health care professionals with insight into young people's use of technology and its relevance in clinical practice. This service was developed in collaboration with researchers and clinicians, who provided advice and input into content development. A particular focus of the project is to trial the use of ROC in a variety of clinical settings. For example, clinicians working with young people who have difficulty opening up in talk therapy could use ROC with their clients. Working through the storylines could provide the opportunity for discussion about the issues that arise or the skills learned from them. Clinicians could also assign ROC as homework between sessions — clients can play the game, read fact sheets on particular issues (eg, anxiety or relationships), or choose worst- and best-case scenarios to see how they impact on the in-game mood. In group therapy, clinicians can split the group into pairs or use ROC with the entire group to work through storylines. This approach removes the first-person focus and can promote conversation around the issues raised in the storylines. Clients do not need to be engaged directly in the game to have conversations about the issues it raises, the unintended consequences of their actions, developing other strategies for managing problems effectively, or exploring the relationship between their thoughts, feelings and behaviour.

Adolescence and young adulthood present a unique opportunity to promote optimal mental health, and the rapid uptake of technology by young people provides considerable scope to trial new approaches designed to prevent mental health difficulties and intervene early in the management of mental health problems. The internet has great potential to be more than simply an information portal, but rather a community or setting in which relationships, both positive and negative, are formed.

### Acknowledgements

Reach Out is a program of the Inspire Foundation (<http://www.inspire.org.au>), a national charity that uses the internet and related technologies to improve the mental health of young people. We acknowledge the young people and mental health professionals who have worked with the Inspire Foundation team and given freely of their time to help create the Reach Out website. ROC was funded by the Sony Foundation and *beyondblue: the national depression initiative*. Reach Out Pro was developed in collaboration with the Brain & Mind Research Institute, Orygen Youth Health, and *headspace* Central Coast. The project was funded by the Australian Government Department of Health and Ageing.

### Competing interests

None identified.

### Author details

Jane M Burns, PhD, VicHealth Senior Research Fellow,<sup>1</sup> and Director of International Partnerships, Research, Policy and Practice<sup>2</sup>

Marianne Webb, BA, Reach Out Interactive Manager<sup>2</sup>

Lauren A Durkin, PhD, Research and Evaluation Manager<sup>3</sup>

Ian B Hickie, AM, MD, FRANZCP, FASSA, Executive Director<sup>4</sup>

1 Orygen Youth Mental Health Research Centre, Department of Psychiatry, University of Melbourne, Melbourne, VIC.

2 Inspire Foundation, Melbourne, VIC.

3 Inspire Foundation, Sydney, NSW.

4 Brain & Mind Research Institute, University of Sydney, Sydney, NSW.

Correspondence: [jane@inspire.org.au](mailto:jane@inspire.org.au)

### References

1 Australian Institute of Health and Welfare. Young Australians: their health and wellbeing 2007. Canberra: AIHW, 2007. (AIHW Cat. No. PHE 87.)

- 2 Slade T, Johnston A, Teesson M, et al. The mental health of Australians 2. Report on the 2007 National Survey of Mental Health and Wellbeing. Canberra: Department of Health and Ageing, 2009.
- 3 Morgan A, Jorm A. Awareness of *beyondblue: the national depression initiative* in Australian young people. *Australas Psychiatry* 2007; 15: 329-333.
- 4 Hickie IB, Fogarty AS, Davenport TA, et al. Responding to experiences of young people with common mental health problems attending Australian general practice. *Med J Aust* 2007; 187 (7 Suppl): S47-S52.
- 5 Möller-Leimkühler AM. Barriers to help-seeking by men: a review of sociocultural and clinical literature with particular reference to depression. *J Affect Disord* 2002; 71: 1-9.
- 6 Chandra A, Minkovitz CS. Stigma starts early: gender differences in teen willingness to use mental health services. *J Adolesc Health* 2006; 38: 754.e1-754.e8.
- 7 Smith JA, Braunack-Mayer A, Wittert G, Warin M. "It's sort of like being a detective": understanding how Australian men self-monitor their health prior to seeking help. *BMC Health Serv Res* 2008; 8: 56.
- 8 Macdonald JJ. Shifting paradigms: a social-determinants approach to solving problems in men's health policy and practice. *Med J Aust* 2006; 185: 456-458.
- 9 Australian Bureau of Statistics. Household use of information technology, Australia 2006-07. Canberra: ABS, 2007. (ABS Cat. No. 8146.0.)
- 10 Baranowski T, Buday R, Thompson DI, Baranowski J. Playing for real: video games and stories for health-related behavior change. *Am J Prev Med* 2008; 34: 74-82.
- 11 Borzekowski DLG, Rickert VI. Adolescent cybersurfing for health information: a new resource that crosses barriers. *Arch Pediatr Adolesc Med* 2001; 155: 813-817.
- 12 Gould MS, Munfakh JL, Lubell K, et al. Seeking help from the internet during adolescence. *J Am Acad Child Adolesc Psychiatry* 2002; 41: 1182-1189.
- 13 Leach LS, Christensen H, Griffiths KM, et al. Websites as a mode of delivering mental health information: perceptions from the Australian public. *Soc Psychiatry Psychiatr Epidemiol* 2007; 42: 167-172.
- 14 Ybarra ML, Suman M. Help seeking behavior and the Internet: a national survey. *Int J Med Inform* 2006; 75: 29-41.
- 15 Christensen H, Griffiths K. The Internet and mental health literacy. *Aust N Z J Psychiatry* 2000; 34: 975-979.
- 16 Nicholas J, Oliver K, Lee K, O'Brien M. Help-seeking behaviour and the Internet: an investigation among Australian adolescents. *Aust e-J Adv Ment Health* 2004; 3 (1): 16-23.
- 17 Burns JR, Rapee RM. Adolescent mental health literacy: young people's knowledge of depression and help seeking. *J Adolesc* 2006; 29: 225-239.
- 18 Cotton SM, Wright A, Harris MG, et al. Influence of gender on mental health literacy in young Australians. *Aust N Z J Psychiatry* 2006; 40: 790-796.
- 19 Burns J, Morey C, Lagelée A, et al. Reach Out! Innovation in service delivery. *Med J Aust* 2007; 187 (7 Suppl): S31-S34.
- 20 Oliver K, Collin P, Burns J, Nicholas J. Building resilience in young people through meaningful participation. *Aust e-J Adv Ment Health* 2006; 5 (1): 34-40.
- 21 Swanton R, Collin P, Burns J, Sorensen I. Engaging, understanding and including young people in the provision of mental health services. *Int J Adolesc Med Health* 2007; 19: 325-332.
- 22 Burns JM, Durkin LA, Nicholas J. Mental health of young people in the United States: what role can the internet play in reducing stigma and promoting help seeking? *J Adolesc Health* 2009; 45: 95-97.
- 23 Howell K. Games for Health Conference 2004: issues, trends, and needs unique to games for health. *Cyberpsychol Behav* 2005; 8: 103-109.
- 24 UN News Centre. 'Food force' video game sweeps northern Europe – UN Agency. 16 May 2007. <http://www.un.org/apps/news/story.asp?NewsID=22564> (accessed May 2010).
- 25 Beale IL, Kato PM, Marin-Bowling VM, et al. Improvement in cancer-related knowledge following use of a psychoeducational video game for adolescents and young adults with cancer. *J Adolesc Health* 2007; 41: 263-270.
- 26 Kowalenko N, Rapee RM, Simmons J, et al. Short-term effectiveness of a school-based early intervention program for adolescent depression. *Clin Child Psychol Psychiatry* 2005; 10: 493-507.
- 27 Neil AL, Christensen H. Australian school-based prevention and early intervention programs for anxiety and depression: a systematic review. *Med J Aust* 2007; 186: 305-308.
- 28 Burns JM, Andrews G, Szabo M. Depression in young people: what causes it and can we prevent it? *Med J Aust* 2002; 177 (7 Suppl): S93-S96.
- 29 Shandley K, Austin D, Klein B, Kyrios M. An evaluation of 'Reach Out Central': an online gaming program for supporting the mental health of young people. *Health Educ Res* 2010; Feb 11 [Epub ahead of print].
- 30 Shandley K, Klein B, Austin D. The players' perspective of *Reach Out Central*: a therapeutic interactive online game. *E-J Appl Psychol* 2008; 4 (2): 51-55.

(Received 31 Aug 2009, accepted 19 Jan 2010)

□