tigate whether combining virtual reality assisted therapy with wearables and phone apps could help overcoming the barrier between treatment room and daily life.

A new exciting area of research is exploring the use of virtual reality in the training of army medical personnel to increase resilience when deployed to war zones and prevent the onset of mental health problems[9]. Moving forward this approach will be interesting to investigate the use of virtual reality in the training of mental health staff to improve their skills in recognizing and treating psychosis.

Virtual reality could also play a crucial role in researching resilience factors to stressful events in relation to different mental disorders and could inform the development and implementation of prevention strategies. A multi-disciplinary understanding of the mechanisms involved in the onset and maintenance of psychosis that draws connections between psychology, psychiatry, neuroscience, education, computer science and gaming technology will inform core research questions, such as the following: How does emerging psychosis affect behaviour in social situations? How can social environments be effective in building resilience and improving well-being of young people at ultra-high risk for psychosis? How can we use virtual reality in teaching settings to educate young people about early signs of mental health problems? To achieve these ambitious goals, we need to break down the invisible barriers between academia, health providers and new technology industry. We also need to embrace new flexible research designs to evaluate the effectiveness of these continuously evolving technologies[10].

To conclude, a comment about augmented reality. While virtual reality head mounted displays immerse the user in an artificial world, augmented reality displays superimpose virtual images to the real world so that both are visible at the same time. Augmented reality is in development and has enormous potential for training and education as well as for health applications in the next two decades.

For a video example of the use of virtual reality with psychosis, please watch a documentary at https://www.youtube.com/watch?v=DeLBb7BYJ9E.

Lucia Valmaggia
Department of Psychology, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK

1. Parsons TD, Carlew AR, Magtoto J et al. Neuropsychol Rehabil 2015;11:1-31.
2. Slater M, Sanchez-Vives MV. Front Robot AI 2016;3:74.
3. Valmaggia LR, Latif L, Kempton MJ et al. Psychiatry Res 2016;236:189-95.
4. Valmaggia LR, Day F, Rus-Calafell M. Soc Psychiatry Psychiatr Epidemiol 2016;51:921-36.
5. Rus-Calafell M, Gutierrez-Maldonado J, Ribas-Sabate J. J Behav Ther Exp Psychiatry 2014;45:81-9.
6. Freeman D, Bradley J, Antley A et al. Br J Psychiatry 2016;209:62-7.
7. Pot-Kolder R, Veling W, Geraets C et al. Trials 2016;17:25.
8. Craig TK, Rus-Calafell M, Ward T et al. Trials 2015;16:349.
9. John BS, Oliva LS, Buckwalter JG et al. Stud Health Technol Inform 2014; 196:182-4.
10. Mohr DC, Cheung K, Schueller SM et al. Am J Prev Med 2013;45:517-23.

DOI:10.1002/wps.20443

Mental health Internet support groups: just a lot of talk or a valuable intervention?

Over the past 15 years there has been a rapid growth in research demonstrating the effectiveness of online cognitive behavioural interventions for the treatment of common mental disorders[1]. There has been substantially less professional and research interest in Internet support groups (ISGs) that provide peer-to-peer support to individuals with a mental illness. This is surprising given the widespread availability and popularity of ISGs[2] and the recommendation in at least one leading clinical practice guideline that individuals with depression be advised of self help and support groups[3].

ISGs provide an accessible form of support regardless of geographical location or time of the day. They enable anonymous participation and may facilitate engagement of individuals with symptoms (such as social anxiety) which hinder face-to-face interaction. Online groups differ in whether or not they are overseen by mental health professionals or moderated to ensure members adhere to the rules of the group. Some groups are synchronous, enabling real-time conversations between users, although most are asynchronous, involving sequential posts and delayed responses.

Support groups, including ISGs, are typically seen as a device for facilitating recovery among people with mental illness. In this context recovery is characterized not as the elimination of symptoms but rather as living a hopeful, contributing and satisfying life[4]. Nevertheless, there is some high quality evidence of the effectiveness of ISGs in reducing depressive symptoms, with a large randomized controlled trial showing a greater reduction of depressive symptoms in the medium and long term following an ISG intervention than an attention control condition[5]. Such evidence is consistent with survey research reporting user-perceived reductions of depressive symptoms with depression ISG use[6]. Further, consistent with hypotheses that ISGs may contribute to recovery, the above ISG trial found a greater short-term increase in perceived empowerment among the ISG than the control group[7].

Other reported benefits of depression ISGs, emerging from user self-reports and qualitative analysis of user posts, include improved daily functioning, reduced isolation, and increased professional help seeking and knowledge of medications[6]. Qualitative evidence suggests that users value the emotional

support, information, advice and companionship provided by depression ISGs, and appreciate the opportunity to express their feelings in a non-judgmental, emotionally safe environment without burdening their family and friends[8]. Users particularly value the opportunity for "shared understanding", which they perceive as "validating, reducing the sense of isolation and enhancing a sense of belonging"[8]. The extent to which one or more of these effects underpin improved health and other outcomes is unclear.

Overall, the above evidence suggests that ISGs might prove a useful tool in the management of depression. However, ISGs are not universally valued by consumers and, although adverse effects are less commonly reported than benefits in the extant literature, mental health ISGs have the potential for such effects. For example, a minority of ISG users in the above-mentioned trial of a depression ISG reported feeling distressed and anxious that they were unable to help others more[9]. Future research is required to determine who is at most risk of this unfavourable outcome and whether there are effective interventions either on the ISG itself or delivered *a priori* to mitigate this distress.

There have also been in-principle concerns that prolonged exposure to negative emotional content might exacerbate a user's depression. There is no evidence at a group level of such contagion in the experimental trials undertaken thus far. However, given the potential risks, a case can be made for precluding discussion about suicidal behaviour to eliminate the possibility of suicide contagion.

Although ISGs typically aim to provide a supportive environment, not all boards are closely moderated to prevent negative or combative posts. Conversely, moderation and the rules themselves may anger or distress some users, who may question the rationale for removing a post or for instituting a particular rule[9]. There is also potential for participants in an ISG to inadvertently disclose identifying information across multiple posts. Whereas the information on a post may not be identifying when taken in isolation, the pattern emerging from multiple posts may provide indicators of the user's identity unless closely monitored by moderators.

What then are the implications of these findings and concerns for psychiatrists and other mental health practitioners? At a minimum it is important to recognize that some clients may already be using these groups. The practitioner can take steps to identify if this is the case and, if so, to elicit information about the type of ISG used. Does it have a moderator, does it have rules to protect the safety of participants, does the ISG allow discussion of triggering material such as suicidal ideation and behaviours? Furthermore, the practitioner can explore the impact of the ISG on the individual and provide appropriate support and guidance if indicated.

But should practitioners proactively refer individuals under their care to a depression ISG or instead actively discourage participation? As with any health management decision, the answer requires a consideration of the relative costs and benefits of a strategy and the circumstances and preferences of the particular client. Rarely is an intervention without any potential risk. The current evidence does not justify the use of ISGs as a primary treatment. However, a case could be made for the use of depression ISGs as an adjunct to usual care for selected clients, provided that suitable protections, safety nets and monitoring are instituted.

What are the next steps? Further research is required to explore the effectiveness and any potential adverse consequences of ISGs, not only for depression but also for other mental health conditions, and to identify the predictors of positive and negative outcomes if and where they occur. Research is also required to further explore the potential for the development of automated classifiers which detect and flag "at risk" posts[10] to assist ISG providers in ensuring the safety of users.

Moreover, educational resources are required for practitioners and users. Training in the use of e-mental health resources, including ISGs, is already available online to Australian practitioners as part of a government-funded initiative to implement e-mental health in practice. Similar initiatives are required elsewhere.

Finally, there is an urgent need to establish a sustainable, independent international quality assurance body to publish accessible reviews of individual ISGs, their characteristics and any evidence associated with them, for the benefit of both practitioners and potential users. The Internet provides users with access to global communities of consumers. Global initiatives are required to optimize the potential of the resulting resources.

Kathleen M. Griffiths
Research School of Psychology, Australian National University, Acton, Canberra, Australia

1. Hedman E, Ljótsson B, Lindefors N. Expert Rev Pharmacoecon Outcomes Res 2012;12:745-64.
2. Fox S. Peer-to-peer healthcare. Sacramento: California Healthcare Association, 2011.
3. National Institute for Health and Care Excellence. Depression. The treatment and management of depression in adults. London: National Institute for Health and Care Excellence, 2009.
4. Anthony W. Psychosoc Rehabil 1993;16:11-23.
5. Griffiths KM, Mackinnon AJ, Crisp DA et al. PLoS One 2012;7:e53244.
6. Griffiths MK, Calear LA, Banfield M et al. J Med Internet Res 2009;11:e41.
7. Crisp D, Griffiths K, Mackinnon A et al. Psychiatry Res 2014;216:60-6.
8. Griffiths KM, Reynolds J, Vassallo S. JMIR Ment Health 2015;2:e14.
9. Crisp DA, Griffiths KM. JMIR Ment Health 2016;3:e4.
10. Milne DN, Pink G, Hachey B et al. CLPsych 2016 shared task: triaging content in online peer-support forums. Presented at the Third Annual Computational Linguistics and Clinical Psychology Workshop, San Diego, June 2016.

DOI:10.1002/wps.20444