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Online Social Media: New data, New Horizons in Psychosis Treatment

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Oh and DeVylder provide a valuable contribution with respect to the potential and challenges of Internet and mobile-based technologies to improve psychosis evaluation and treatment. We offer two additional considerations on the opportunities provided by social media in conjunction with novel analytics procedures. In addition, we reflect on the balance between rigorous evaluation and development and ongoing innovation in the field.

Big data, big thinking

The authors make excellent points in relation to the opportunity for mobile in real time evaluations to overcome the limitations of traditional assessment procedures through collecting rich, idiographic, ecologically valid data. This information can be used to both unravel contextual factors surrounding the occurrence of psychotic symptoms and guide in real time interventions. Looking forward, these new technologies can be used to collect large-scale longitudinal datasets, significantly increasing statistical power and enabling us to answer critical questions such as the predictive validity of psychotic experiences in young people at ultra-high risk as well as the predictive value of early warning signs in patients with psychosis. Importantly, we will be able to assign

individualised levels of risk to participants or even assess mediators of intervention effects in real time, informing the development of interventions targeting theorised mechanisms of action.

Online social media: a new paradigm for interventions in psychosis

Online social media interventions provide a new paradigm in psychosis treatment. Online social networking can be used to counteract social isolation and disadvantage - a risk factor for developing psychosis and poor symptomatic and functional outcomes (Norman et al., 2005; Norman et al., 2012), enhance engagement with online interventions -a key challenge in the field (Eysenbach, 2005), and improve uptake and acquisition of therapeutic strategies. The integration of online social media and evidence-based interventions provides an entirely new therapeutic milieu in which participants can safely self-disclosure, take positive interpersonal risks, gain perspective, broaden and rehearse coping skills, obtain encouragement and validation, and learn how to solve problems (Alvarez-Jimenez et al., 2013).

The irruption of online-social media based interventions offers fascinating new prospects. New data will be generated and novel data analytics approaches such as social networking analysis (SNA) (Otte and Rousseau, 2002) and data mining and aggregation can be used to determine how social interactions and relationships develop and influence treatment outcomes. Linguistic analytics (Tausczik and Pennebaker, 2010) and sentiment analysis and can be employed to determine how the emotional valence of online communication affects engagement, online interactions and mental health outcomes. Coupled with machine learning methodologies, these new types of data can be used to make individualised predictions of risk for disengagement, depression, social isolation or even imminent risk for relapse, guiding the delivery of

tailored interventions. A significant challenge for online social-media interventions is to create an environment that enables meaningful relationships, creating a sense of belonging and a positive therapeutic environment. Novel social gamification approaches provide a promising avenue to facilitate participants interaction with one another, including attractive quizzes to get to know other users, team up to face challenges, or guess answers to a therapeutic puzzle. Other important questions that the field will need to address are: what are the optimal scale and operations of an online social network? How do experts best intervene at the level of social networks as well as with individuals?

Rigour in evaluation, rigour in development

As the authors pointed out technologies can indeed outpace the timelines for traditional randomised controlled trials. However, the field needs to guard against prematurely embracing innovation without rigorously evaluating potential risk and treatment effectiveness. The WHO Global eHealth Evaluation Meeting's Call to Action (Bellagio, September 2011) consensus statement stated that "to improve health and reduce health inequalities, rigorous evaluation of eHealth is necessary to generate evidence and promote the appropriate integration and use of technologies". In other words, eHealth investments must be guided by evidence-based practices. That said, new assessment methodologies such as machine learning offers a potential alternative strategy for iterative testing of treatment effects (Bishop, 2006). Successive innovations in technology can be then guided by previous data and tested in real time. In this way, participants of a clinical trial will be exposed to successive improvements and upgrades, meeting the need for ongoing innovation while minimising the threats to the internal validity of the intervention being tested (i.e., through exposing all participants to the upgraded intervention).

The science of developing online interventions

The design process of new online and mobile interventions is pivotal in ensuring high quality interventions that are relevant, engaging and effective. The development process needs to follow well-established procedures of user-centred design (Alvarez-Jimenez et al., 2014). Ongoing development needs to be informed by usage data as well as participants feedback. In order to meet the need for innovation and ongoing engagement we require robust, testable theoretical models of engagement and novel combinations of multi-disciplinary experts and designers. We need to advance a *science of development* of online social media interventions for patients with psychosis. For example, creating therapeutic content that is engaging, meaningful, action-based and promotes users interactions may require the collaborative input of professional creative writers, experts in human computer interaction and information systems, artists, clinical psychologists and end-users.

Who can say how far new mobile and online technologies will take us in solving old problems and the kinds of new problems it will pose, but we agree that the time is ripe to embrace the challenge.

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