Mental Health and Technology

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Abstract

Qualitative and mixed methods play a prominent role in mental health services research. However, the standards for their use are not always evident, especially for those not trained in such methods. This paper reviews the rationale and common approaches to using qualitative and mixed methods in mental health services and implementation research based on a review of the papers included in this special series along with representative examples from the literature. Qualitative methods are used to provide a "thick description" or depth of understanding to complement breadth of understanding afforded by quantitative methods, elicit the perspective of those being studied, explore issues that have not been well studied, develop conceptual theories or test hypotheses, or evaluate the process of a phenomenon or intervention. Qualitative methods adhere to many of the same principles of scientific rigor as quantitative methods, but often differ with respect to study design, data collection and data analysis strategies. For instance, participants for qualitative studies are usually sampled purposefully rather than at random and the design usually reflects an iterative process alternating between data collection and analysis. The most common techniques for data collection are individual semi-structured interviews, focus groups, document reviews, and participant observation. Strategies for analysis are usually inductive, based on principles of grounded theory or phenomenology. Qualitative methods are also used in combination with quantitative methods in mixed method designs for convergence, complementarity, expansion, development, and sampling. Rigorously applied qualitative methods offer great potential in contributing to the scientific foundation of mental health services research.

Keywords: qualitative research, mental health services, dissemination and implementation research, mixed methods, ethnographic methods

Introducion

Within the broad field of healthcare and welfare a wide range of services are offered which are aimed at promoting the wellbeing and mental health of individuals. While the context and target populations can vary substantially, professionals in this field share many interventions which often rely on face-to-face interactions. However, digital technologies can also support these services, either stand-alone or in combination with an existing service offer. New technologies can allow for more flexibility, can offer interventions in the natural context, can reach a larger population without risk of stigma, and can be more cost-effective as compared to existing services ([1], [2]). Research increasingly shows how selective and targeted use of technology can have a meaningful impact on the quality of care and the role users can take in the organization and delivery of services ([3]). For example, users may be able to have more control over their care, especially in the context of chronic illness ([4]).

Nevertheless, there is a sharp contrast between what is technically possible and the amount of research that has actually been done so far. As a result, there are an overwhelming number of options, which hampers overview. To address this, attempts have already been made to structure parts of the field, for example for specific technologies, e.g., internet-supported mental health interventions ([5], [6]), smartphone apps ([7]) or for particular domains, e.g., for emotion regulation in clinical psychology ([8]). The current overview of reviews aims to extend those previous endeavors by expanding the scope to all technologies applied to the broad

domain of mental health and wellbeing. The goal is to structure existing technologies and interventions which have been the focus of reviews, rather than to summarize the effectiveness of singular approaches. By summarizing the large body of research to date and by highlighting both similarities and differences across approaches and settings, we hope to further structure this domain and to inform about gaps in research that currently still exists.

Applications of ESM in the Mental Health Research Field

In this section, we review how zooming in on the micro-level of experience and behaviour using ESM can help in improving our understanding of the phenomenology and aetiology of psychopathology and in strengthening and changing clinical practice.

Improving understanding of symptoms

Although psychiatry has developed a common terminology to describe different aspects of psychopathology (e.g., as reflected in features described in the ICD or DSM), our understanding of the nature of these phenomena is still fairly limited, partly due to the biases introduced by the retrospective recall of symptoms. ESM addresses this issue by capturing symptoms as they occur. Indeed, studies that compared retrospective and ESM assessment of symptoms reported that the former assessment tends to under- or over-estimate depressive symptoms in patients with depression[9]. Furthermore, only moderate correlations were found between retrospective and momentary assessment of affect in patients with psychosis[10], [11].

Besides providing a more accurate assessment, ESM may be instrumental for obtaining a deeper understanding of how symptoms unfold in daily life over time. Good examples are anhedonia and avolition, both of which have long been reported to form part of the phenomenology of psychotic disorders, depression and bipolar disorder[12].

Anhedonia is generally described as a diminished capacity to experience pleasure. However, what does this mean for our experience and behaviour in daily life? A decreased level of positive affect in daily life – which has been found in some studies in patients with psychosis[13], [14] – may reflect a diminished capacity to experience pleasure. Yet, decreased levels of positive affect may also result from patients' lives being less enjoyable. Indeed, patients with psychosis do report, on average, a lower number of pleasant events in their daily life than healthy controls[13]. In order to disentangle this, positive affect has been examined in moments when people do report pleasant events. ESM research in individuals with psychosis revealed an intact ability to generate positive affect upon experiencing pleasant events in daily life[15], [16], [17], which does not support the widely held assumption that anhedonia reflects a general incapacity to experience pleasure.

So, what does anhedonia then relate to? Gard et al[18] distinguished experiencing positive affect in the moment (consummatory pleasure) from pleasure related to future activities (anticipatory pleasure), and found the latter to be particularly reduced in patients with psychosis. This distinction may partly explain why patients with psychosis and students with social anhedonia (assessed with observer-rated measures) reported higher levels of positive affect when in the company of others compared to when alone (i.e., suggesting higher consummatory pleasure in social situations), but still spent more time on their own[13], [19].

This brings us to avolition, commonly defined as a lack of motivation or, put differently, an incapacity to translate positive emotional experience into productive goal-directed behaviour. The longitudinal design as well as the assessment of both mood and activities in ESM allows us to directly relate emotional experience to subsequent activities and behaviour. For example, it has been shown that positive affect experienced in social contexts or during physical activity increases the odds of engaging in these behaviours at the next measurement moment in healthy women[20]. Interestingly, this reward-oriented behaviour of positive affect in one moment driving future behaviour was absent in the everyday behaviour of individuals with anhedonia[16], supporting the idea that a lack of anticipatory pleasure (i.e., anhedonia) may result in a reduced drive for seeking out these activities (i.e., avolition).

An emerging trend in affective neuroscience has been to increase functional relevance of experimental findings by investigating hedonic and goal-directed behaviour using laboratory paradigms in conjunction with ESM. Moran et al[21] linked blunted daily-life experience of pleasure and motivation to poorer performance on effort and reward learning tasks in individuals with schizophrenia. Our group combined ESM with neuromolecular imaging in healthy individuals with increased familial risk for psychosis. We found that intact striatal dopaminergic modulation of reward learning predicted daily-life reward-oriented behaviour in both groups, which may point to a neurochemical and behavioural mechanism of resilience in those predisposed to psychosis[22], [23].

In sum, the accumulating ESM accounts of hedonic and volition function in clinical populations have contributed to a more fine-grained understanding of the affective and behavioural dynamics compromising productive goal-directed behaviour, thus opening promising avenues for equally fine-grained prevention and treatment strategies.

Conclusion

The author takes the development of the personality of college students as a starting point, researching and summarizing the research on the mental health and personality of college students in related fields of psychology and choose to use the mental health self-rating scale SCL-90 for data collection and analysis. Effectively evaluate the differences in the analysis results of multisource questionnaires through geometric spatial difference metrics and use color mapping to effectively guide users to pay attention to individual students whose analysis results are uncertain, so as to realize the comprehensive judgment and tracking analysis of mental health status. Effectively integrate the user's prior knowledge, judging the mental health of college students through the use of feedback by relevant researchers; this method is visually displaying data, mining hidden information, and guiding decision-making, and other aspects have both the theoretical value and practical value.

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