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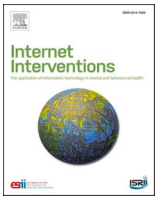

Editorial for INVENT special issue of the ISRII 2022 meeting

The global burden of mental and behavioral health issues is immense, affecting millions of individuals across all demographics (Vigo et al., 2016). The COVID-19 pandemic not only exacerbated this burden but laid bare the challenges to providing care faced by traditional healthcare systems (Kendzerska et al., 2021). The inaccessibility and obstacles to receiving in-person services during the pandemic led to widespread agreement that care should be more accessible, equitable, scalable, and cost effective (Shadmi et al., 2020; Golden et al., 2021).

In an era where technology seamlessly integrates into our daily lives, digital and internet-based interventions emerged as a critical solution in this context, offering remote, flexible, and immediate support to those affected. The convergence of healthcare and digital technologies has not only expanded the horizons of medical treatment but is also democratizing access to care, overcoming traditional barriers of distance, cost, and resource limitations (Osipov and Skryl, 2021; Richardson et al., 2022; Brewer et al., 2020). This special issue for the ISRII 2022 meeting in Pittsburgh, USA, highlights some of the work presented at the conference demonstrating the transformative potential of digital health solutions in reshaping patient care, assessment, therapy, and health outcomes globally. The featured papers emphasize the diversity and depth of digital and internet-based solutions, from their development to their application in real-world settings.

A major theme of this special issue is on the use of eclectic approaches including qualitative analysis (Sikorski et al., 2023), codesign (Biernesser et al., 2023), and machine learning (Shvetcov et al., 2023) to address emerging topics in the field, such as user dropout to interventions (Ciharova et al., 2023), and the ever-important topics of usage and engagement of interventions (Baumel et al., 2023; Colditz et al., 2024; Kornfield et al., 2023; Nagar et al., 2023). This work is essential for optimizing the accessibility and compatibility of interventions with the needs and preferences of their intended beneficiaries, as well as addressing disparities in engagement and outcomes across different demographic groups. The latter point is especially pertinent in the context of underserved and vulnerable populations, such as LGBTQ+ youth (Escobar-Viera et al., 2023), cancer patients (Chow et al., 2023), rural farmers (Thielecke et al., 2023), individuals with chronic illnesses (Materia and Smyth, 2024), children (March et al., 2023), and older adults (Lyew et al., 2023). By considering the unique challenges and needs of these groups, this special issue contributes to the goal of making interventions more inclusive, accessible, and effective for all.

A key advantage of digital and internet-based interventions is that improvements can be made more quickly, and with greater fidelity and consistency, compared to traditional in-person interventions. Several papers in this special issue highlight the importance of developing flexible yet pragmatic approaches to designing digital interventions (Kraepelien et al., 2023; Meyerhoff et al., 2023), as well as conducting post-mortems of research trials to identify lessons to be learned for future trials (Leung et al., 2024). Collectively, these papers advance understanding of how to increase the internal validity of research trials while maintaining flexibility to better ensure that findings are robust and responsive to user needs.

Finally, this special issue highlights the importance of investigating mechanistic aspects of internet and digital health interventions to better personalize interventions to end users (Stamatis et al., 2023; Holsteg et al., 2024; Babbage et al., 2024; Chen et al., 2024). This pertains to both psychological and behavioral mechanisms in users as well as mechanisms in an intervention that drive therapeutic effect. Knowing that an intervention can produce a desired change in a mental or behavioral health outcome is perhaps less important than understanding how this can be reliably achieved. A thorough understanding of what psychological/behavioral mechanisms to target in users, as well as the therapeutic mechanisms in an intervention, makes it possible to continually iterative and improve, thereby achieving an equal or greater result while reducing costs and minimizing user burden. The range of approaches described in these papers contribute to a nuanced understanding of the mechanisms involved in producing a meaningful therapeutic effect.

The global health crisis precipitated by the COVID-19 pandemic has undoubtedly accelerated the adoption of digital and internet interventions, underscoring their value in public health management and emergency response. This special issue includes timely research on the scalability of digital health platforms, their role in disease surveillance, and their effectiveness in delivering support during times of crisis. Such insights are invaluable for policymakers, healthcare providers, and technologists in leveraging digital tools for health system resilience and preparedness. However, the proliferation of digital and internet interventions also brings to the forefront ethical considerations and challenges for promoting data privacy (Murdoch, 2021), continuing to narrow the digital divide (Lythreatis et al., 2022), and pursuing a path towards health equity (Richardson et al., 2022). Several papers in this special issue explore these critical issues to ensure more secure, equitable, and inclusive access to digital health services, which is vital for fostering trust and ensuring the responsible use of technology in healthcare.

As we look to the future, it is clear that digital and internet interventions will play a pivotal role in the evolution of healthcare. The ongoing research and development in this field promise to unveil even more sophisticated and impactful mental and behavioral health solutions. The challenge and opportunity for us all lie in ensuring these

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innovations are accessible, equitable, and effective for everyone, irrespective of geography, socio-economic status, or health condition. Through continued collaboration, innovation, and commitment to excellence, we can realize the full potential of digital and internet interventions to create a healthier, more connected world. This special issue not only highlights the significant strides made in the field of digital and internet interventions but also charts a path forward for future research and implementation.

Declaration of competing interest

The authors have nothing to declare.

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