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Efficacy of Digital Technologies Aimed at Enhancing Emotion Regulation Skills: Literature Review

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Abstract

Emotion has long been acknowledged as an important part of the technology user experience. The impact of emotion regulation (ER) interventions on mental health and well-being has been extensively documented in the literature, although only recently have digital technologies been incorporated in intervention design. Advances in information technology have facilitated the emergence of several digital mental health interventions, delivered via the internet, smartphones, virtual reality, and videoconferencing. This review aims to explore available published literature relating to the efficacy, barriers, and facilitators of digital technologies in enhancing emotion/mood regulation skills.

Keywords: Digital technologies; Emotion regulation; Emotion; Skills

Introduction

The availability of digital technology has made them readily accessible, facilitating mental health treatment delivery at a much higher rate [1].

Digital technologies include smartphones, virtual reality, wearable sensors, biofeedback techniques, web-based training programs, and mobile applications [2]. The use of digital technologies in managing and positively influencing students' affective states has been on the increase [3,4]. Several studies have found that digital technologies are a commonly used tool for emotion regulation (ER), including the use of video games for relaxation, stress control, and management of negative emotions [5]. Through social media and instant messaging services, ER may be regulated by controlling depressive emotions and lowering anxiety in stressful situations [6,7] and reducing loneliness through social networking sites [8,9].

ER is a complex process that involves the ability to initiate, inhibit, and regulate one's emotions in a given situation [10]. ER plays a great part in how we feel, think about, and experience life events. ER is not meant to eliminate emotions from our lives, but to use them smartly to govern the impact that they have on us and result in the preferred outcomes from our moods [11]. Several existing therapeutic approaches have been helpful with emotion regulation disorder. Such interventions are generally practical and have a high success rate.

The objectives of this review are to explain ER interventions that are delivered using digital technologies and to ascertain how diverse digital technologies can be applied to the delivery of ER interventions.

Methodology

A literature search of the following databases MEDLINE, CINAHL, PsycINFO, and Web of Science was conducted from 2016 until 2023. Additionally, the first 10 pages of Google Scholar were examined for relevant articles. The search included peer-reviewed journals in the English language. The following MeSH terms and keywords were used to identify relevant articles: (emotion regulation OR mood regulation) and (intervention OR treatment OR program OR therapy) and (digital technology OR web-based OR mobile application). Reference lists of retrieved papers were manually searched to identify additional publications.

Literature review

Digital technology can be used as a means to enhance positive emotions or help people regulate their emotions at virtually any time and place, and this presents a unique opportunity to implement novel approaches or treatment mechanisms. Digital technologies allow for real-time measurement of cognitive, emotional, physiological, and behavioral responses in a variety of 'real-world' situations while allowing for full experimental control. They can improve a student's ability to positively enhance their emotional skills and better manage mental health issues by training them to adopt contextually adaptive ER strategies [12]. ER plays a key role in the development, maintenance, and treatment of various mental health problems (e.g., depression, borderline personality disorder, substance use disorders, eating disorders, and somatoform disorders). Thus, the delivery of ER using digital technologies may be an important therapeutic target [13].

However, the efficacy and benefit of ER intervention using digital technologies to address mild to moderate and sub-threshold mental health conditions in adults is not yet established. This study suggests that people may spend a significant amount of time using one of the digital technologies for emotion regulation, especially when experiencing negative emotions such as boredom and stress. Students perceive their technology-based emotion regulation efforts as being effective for reaching desired emotional states; however, these effects are likely short-lasting and may sometimes lead to negative outcomes.

Discussion

Strength and limitations

This review has some limitations which should be acknowledged. Firstly, although gray literature and Google Scholar were searched,

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only articles published in the English language were reviewed, possibly missing peer-reviewed papers published in other languages. Secondly, there is significant variation in the terminology of ER which may have led to omissions in our keywords. Thirdly, the small number of available studies and the design and methodology limitations of included studies limit the potential for in-depth synthesis.

The strength of this review includes searches across a broad range of medical databases, gray literature, Google Scholar, and study types used to identify potential papers for inclusion. Our broad search strategy encompassed a wide spectrum of search terms, including emotion/mood regulation, digital technology, mobile applications, virtual reality, sensor bands, and web-based psychological treatment modalities.

This review was wide-ranging as it focused mainly on ER through technology with minimal attention to improving ER for managing mental health issues. The review considers student differences in the digital approach used to enhance emotion regulation. Future studies may explore personalized treatment approaches targeting specific ER symptoms, as digital technology and assessment tools become more sophisticated so will our ability to provide better and more personalized treatment.

Conclusion

The purpose of this review was to identify any existing digital technologies that could be applied to improve ERS, as well as diminish any risks that result in mental health disorders or alleviate their consequences. Despite differing approaches that have been used to conceptualize ER and the use of various digital technologies to deliver complex ER strategies, ER using digital platforms has a broad and significant heuristic value in mental health research.

Studies, therefore, suggest that digital technology is a possible way for students to improve their ER skills and manage mental problems through more adaptive ER strategies. Diverse digital technologies are described as platforms that enable the expression and delivery of tailor-made emotional, bodily, psychological, and behavioural reactions toward various real-life events at the right moment. There remains a need to explore which types of digital technologies provide better results, and why.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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