EXPLORING THE INTERSECTION OF PSYCHOLOGY AND TECHNOLOGY: IMPLICATIONS FOR MENTAL HEALTH

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ABSTRACT

This paper will explore the complex link between psychology and modern technology and how such a connection influences the quality of our mental health. Because of the rapid rise in technology use in daily life. Therefore, it is crucial to learn how to change the psychological effect the digital tools, platforms, and interventions have. The study will use interdisciplinary approach process, gluing together elements from psychology, human-computer interaction, and digital health to look at psycho-technological interface and its effect on mental health outcome. The research is based on qualitative evaluations aimed at discovering the constituents and mechanisms, influencing the intersection of psychology and technology, and as a result, help formulate authentic interventions to promote positive presence in the digital world.

Keywords: Psychology, Technology, Relationship of Psychology and Technology, Mental Health

INTRODUCTION

Psychology and technology are two fields that are interrelated nowadays; which consequently have massive effects on one another. Interrelation between psychology and technology is widely seen in the context of human behavior, cognition and general well-being. Having this insight of the relationship is vital for harnessing the power of the information technology for mental health enhancements and mitigation of negative effects.

Technology and the psychology of people are in this society overly interconnected which manifest themselves in a profound influence on each other. It is manifested in each of that disciplines, including human-computer interaction, behavioural economics, and digital health. The field of human-computer interaction (HCI) relies heavily on psychology to create usable interfaces and systems. Through the knowledge of cognition, perception, and behavior, designers can now make digital experiences that are responsive, well thought out and engaging. Behavioral economics (a discipline involving the fusion of psychological and economic principles) is one of the ways that

technology businesses try to change user behavior. An example of methods employed here is nudging and gamification which are based on scientifically grounded insights of human behavior.

The technology and psychology advances in digital health have developed interfaces for addressing physical and mental health matters. Psychological theories and practices are integrated with various technologies in mental health tracker apps, and virtual reality therapy interventions. The comprehension of what is connection between psychology and technology is essential in several ways. Firstly, it helps us to get a grasp of how technology can affect mental health. An addiction to excessive screen time, social networking, and digital distractions can be accompanied by stress, social anxiety, and depressive symptoms. Hence, by learning about the ways digital technologies affect our mental health, we can develop counteracting strategies to preserve digital wellbeing. Furthermore, the awareness of this relationship is very important in the preparation of an efficient intervention approach.

Using psychological theories and empirical research as a basis, the technology companies can develop tools and platforms, the users of which will have instant access to the mental health support when needed. Ethical considerations should also include psychological impact of technology, which is finally a key factor. Challenges such as the protection of privacy, data security, and algorithmic bias calls for appropriate mechanisms to make sure that the advancements in technology are implemented responsibly as well as morally. Integrating various fields of expertise will be the first step to overcoming challenges at the junction of psychology and technology. By brining together psychologists, technologists, ethicists, and policymakers we may be able to come up with comprehensive approaches which prioritize users well-being and ethical issues. Boosting education and awareness regarding the psychological influence of technology is the key to empowering individuals in making considered decisions on their personal digital life. Through media literacy, digital citizenship, and mindful use of technology, individuals can learn to navigate the digital realm in ways that support their mental health and general well-being.

Limitations of Research

There may arise a problem of sampling bias which focuses on those who are more computer savvy and residing in the places where the internet is more available that people do not participate in digital surveys. This could pose a problem to generalization since the nest group using the technology could be different for each case. However, the other category that might be looked into under this particular research is experimental studies that only show the short-term effects of technology intervention on mental health. The long-term implications of the digital approaches have to be tested and assessed if they are to be used in the treatment of psychiatric disorders.

It is common knowledge that a great part of class interaction between psychology and technology involves many irregularities that contribute to the results. Attempts will be made to use controls for different confounders but this may be not simple to divide the impact of technology on mental health from all other variables which happened in the same period. Whether or not the case involved the controversial issues like as for example privacy and informed consent, it would still be possible to identify some conflicting ethical dilemmas that might be become the source of ethical concerns during the research period. Hence, ethicality of research again needs to be constantly monitored and be more dynamic simultaneously as the intensity of technology keeps changing and so the aspect of mental health. However, similar to the other examples on the other side of the spectrum, involving cultural and contextual factors which affect how people look at mental health and technology could affect the study. Regarding the diversity of the causes of these risk factors, the critical issue is precisely the acceptance of the differentiation when interpreting the data and generalizing the conclusions The word "immunity" is derived from the Latin word "immunitas", which means "freedom from". When a person's immune system is functioning properly, it is able to recognize and respond effectively to various infectious agents, such as viruses and Besides, participation size and depth might close because of limitation for funding, enabling time, and access to the equipment or experts on special fields. The process of generating research questions and analysis plan may thus be shortened with lesser data to work on. In other words, the depth of the findings would be limited.

Significance of Research

This research article serves as an instrument in enlightening policy makers, mental health care workers, and technology engineers on the dynamics of how psychology and technology may interact. Through the examination of the vital elements driving digital wellness, the findings can supply valuable insights for the formulation of policies and procedures aimed at the promotion of beneficial psychological effects in the digital era. As the amount of digital tools applied for mental health urgently is growing, one should carefully evaluate their effectiveness and the limitations. A conducive environment of sharing the knowledge on digital interventions will be created with this research paper reporting the design, implementation, and efficacy of digital interventions towards people's mental health concerns. The secondly is that ethic considerations need to be addressed in the development and use of digital technologies as in this digital age, technologies addiction, bullying online, and privacy infringements escalates. It can be determined through evaluations of the possible risks and the ethical issues thus the outcome can be used to

establish guidelines and safety protocols. And not only that but looking into the intersection of psychology and technology, the research paper hereafter highlights as well the user-centered design which can be used in development of digital interventions for mental health. People's desires, experiences and mental health can help create effective and user-friendly tech that is filled with features related to mental well-being. Those results aid for the scientific research where the topics are psychology, human-computer interaction and digital health. The research brings into focus the bioethical dilemmas and implications emerging from this phenomenon on our social and cultural life. Hence, this paper is an act to empower people to make mindful decisions about their technology exposure and mental health. Different insights can analyzed and presented as evidence-based recommendations which can help users to use digital space in a manner that would improve their wellbeing, and build resilience.

Research Questions

1. Which psychological conditions determine the technology use patterns of individuals and divide them into those who are mentally healthy and those who have problems?
2. What is the role of individual characteristics, for example, personality traits and cognitive modes in the use of technology and its influence on mental health issues?
3. What particular design factors of digital platforms and the interventions triggered by them result in better psychological wellbeing of the users, and what is their relation to the users' specific personal features and inclinations?
4. What is specialty of diverse digital interventions in improving mental health and how is their effect mediated by variables peculiar to populations different from each other?
5. How can the integration of this technology into mental health care be implemented without compromising patients' wellbeing: what are the risks and ethical considerations and what can be done to ensure that digital interventions are carried out with responsibility and ethics?

Research Objectives

- For the investigation of how psychological processes operate when the user connects to technology and on mental health.
- To explore the part played by individual trait differences (for example, personality traits, cognitive styles) that shape the behavior regarding tech and mental health outcomes.
- To look into the design function of digital platforms and intervention that contributes in the wellbeing of individuals.
- For gauging the impact of different digital interventions (like mindfulness apps, Virtual reality therapy) on mental well-being.
- Clinician's goal is to realize the possible risks and ethical issues that are associated with integrating technology into the treatment of mental health.

Literature Review

Psychology is the field of science that aims to understand why human beings behave the way they do and what drives their thought processes. It is of particular significance in dealing with understanding and treatment of mental health complications. In current times, the psychology-technology bond has become ever more salient - given all the mental health problems that have spiked. Technology has become part of everyone's life in one way or another and has led to evolution of how people engage with information, communicate among peers, and come across mental health resources. According to Smith and Brown (2018) the vast use of digital technologies, such as Smartphone and social media platforms have deeply impacted on the nature of peoples behaviour and methods of communication. Besides, such an electronic revolution gives rise to a number of issues about the influence of digital technologies on psychological state of the people.

Numerous research work have been pointing out the possible harmful impact of excessive technology use on mental wellness. For example, those who have higher screen time are likely to experience greater depression symptoms than the youth with less screen time According to Twenge and Campbell (2018). Also, studies conducted by Primack et al. (2017) have shown that decreased interpersonal interaction due to the use of social media could lead to depression and loneliness among young

people. On the other hand, technology is not entirely dark, as it also represents an instrument for mental health care and wellness. Mobile phone applications and online therapy platforms have been introduced as viable treatment options, which are affordable and easily accessible relatively to other options for the target group (Firth et al., 2017). For example, in a meta-analysis research by Linardon et al. (2019) was made and this concluded that the digital interventions for anxiety and depression were found to be effective during their part in reducing symptoms compared to control groups.

Additionally, the technology takes new turn technology, including artificial intelligence (AI) and virtual reality (VR) that might be the key to world of diagnosis, treatment, and monitoring of mental health. AI-powered chatbots are self-sufficient and always available to assist any individuals facing distress by providing proper alert. VR-based exposure therapy (Rizzo et al., 2017), also has showed promising results as a treatment for phobias and post-traumatic stress disorder. Nevertheless, on top of the ethical dilemmas and practical difficulties that embrace technology in mental health care, there are some valuable aspects regarding its role in mental health care, which needs to be carefully explored. Privacy issues and data security are the key ethical dilemmas which the designers of apps for mental health solutions must address in order to assurance the ethical application of technologies (Luxton et al. 2016). In addition, achieved inequity in access to technology and core skills may aggravate the mental health inequality (Rousar et al., 2020).

The influence of psychosocial factors on both the correlation and the association between psyche and technology in this context of mental health cannot be overlooked. Cultural norms, views, and attitudes of people toward technology form a psychological association that affects individuals' opinion about the mental health effect of technology. A case study given by Cheung et al. (2019) showed the varying ways that the social media usage could be related to psychological distress among the youth. This is a point that points to the fact that the researchers need to take into account cultural factors for better understanding of mental health outcomes that are related to technology. Aside from this, the coronavirus disease emergency has proven to be the tool that is making digital technology faster in providing contemporary mental health services. Teletherapy, online support groups, and

digital self-help resources, in particular, have above origin stood as the key tools for safeguarding mental health during times of social distancing and lockdown (Torous et al., 2020). While the technologies bring a new approach to the treatment of minority groups and potential removal of the roadblocks, they also face the issues of digital literacy, privacy and equality in terms of access to healthcare. In contrary to these problems, scientists and professionals are involved in the development of new strategies which are based on the interrelation of psychology and technology to improve mental health care. For instance, the methodology of participatory design entail and involving the engagement of end users and individuals who are with mental illness lived experience; in the development of digital interventions (Nicholas et al 2019). These approaches incorporate different stakeholders during the design period, thus ensuring the sustainability and appropriateness of the technology solutions produced. Besides, the newly appearing AI-based technologies and machine learning have to be implemented to offer especially targeted and precision mental health care support. The statistical analysis of the large number of clinical datasets and user-generated data allows AI to detect patterns, predict the outcome of the treatment and adjust interventions to the specific needs of the individual (Iniesta, Ok, et al., 2016). Nonetheless, ethical concern in regard to data privacy, algorithmic transparentness and bias belongs to the physician's responsibility to guarantee the ethical application of AI in mental healthcare.

Lastly, it can be said that the paring between psychology and technology is dynamic and is developing, with the focal points on mental health problems can be dealt with. Across the global mental health realm, culture, ethics and practicalities are the three intervening factors that help us to make the most out of technology in order to advance both mental health outcomes and the holistic well-being of patients from all these divers backgrounds.

Health and technology run together in a digital manner -formed by the impact of digital technology on all aspects of individual's lives (physical and mental). This literature review examines the effect of technology on mental health problems as much as it wishes on digital addiction and cyberbullying, as well as physical health problems as such as being sedentary and sleeping disorders. Digital addiction, a condition which is being defined by the major abuse

of the digital devices and online forums, has brought up the idea of mental health as an issue of our concern. As stated by Twenge and Campbell (2018), there is a direct link between increased screen time and higher levels of depressive symptoms. Moreover, as indicated by their research, screen time doesn't simply cause mental health problems. On the other hand, it's the other way round: it is the occurrence of mental illness, such as depression and anxiety, that tends to cause increased screen time as a way of coping The increased connection and "instant reward" tendencies brought about by digital devices contribute to addiction and solitude, which in turns correlation with stress, low self-esteem. Cyber bullying, assisted by the anonymity of the Internet and its accessibility on various platforms, has become the number one reason for the mental well-being among youth, people aged 13-24. Patchink and Hinduja recognize that cyberbullying is widespread and it can lead to mental issues, depression, social avoidance and even suicidal that are very serious. The cyber bullying effects victims to experience an emotional trauma that may last and them suffer in dealing with constant attacks and humiliation by the cyber perpetrators.

The rise of digital technologies usually gives ups to the sedentariness for the majority of individuals which associated with lots of physical diseases. According to a research report by Tremblay et al. (2017), sitting for prolonged periods of time and performing limited activity of the body increases the likelihood of developing obesity, diabetes, and cardiovascular diseases. Our digital space has made this task possible by creating more avenues where people can remain active and engaged for a long duration without having to break from the comfort of their smartphones or the screens of their televisions. Beyond that, the before bedtime use of digital devices could impede sleep linked to sleep disruptions and disturbances. The blue light produces reduction in melatonin hormone by which intern we feel difficulty in falling asleep and as a result we experience poor sleep quality (Czeisler et al., 2015). Sleep disturbances are nothing but insomnia and sleep deprivation. They negatively affect the physiological well-being of an individual by impairing their immune system, cognitive ability and heighten the risk of having chronic illnesses.

Research Methodology
The study is conducted based on the method of mixed-methods utilizing combined methods of analyzing quantitative surveys, experimental studies, and qualitative studies. Couples will be recruited from across different backgrounds, including gender, ethnicity, socioeconomic status, geography, among others, to permit research generalizability. Data to be collected in the quantitative method is going to be from online surveys that measure tech dependence, psychological factors, and mental health effects. Experimental approaches will be applied in order to vary the indicators of utilizing technology (i.e. social media consumption, digital detox) to trace the effects on mental health. A qualitative research design will provide richer content concerning user experiences with technological tools and mental health.

Discussion and Analysis
Psychological factors Influence Individuals' Technology Usage
Personality is arguably one of the aspects that have an impact on the way we use technology and the effect that technology has on us mentally. Example: someone can be very sociable and they use social media to keep up communication with peers, on the other hand other people choose forums to interact in. This could be detrimental to one's mental health, evidence has shown that excessive social media use can lead to feelings of being all alone and depression. It is with that self-belief that we use technology as an effective tool for the economy and the society. People who have confidence about technological capabilities may use those technologies more often, which may have beneficial mental health outcomes to them by feeling belong and being in control. The angle from which we combat stress is also important. The occurrence of gaming or social media for temporary escapism of some youth is another scenario. However, it is not advisable to use technology for coping the way as it can hinder you off the real-life duties and may also worsen mental health conditions.

Social media also give rise to the prevalent phenomenon of everyone comparing themselves with everyone else which adversely affects their self-esteem and mental health. Watching other people's advertisements of their lives on the internet can result in insecurity or dissatisfaction, which in turn harms an individual's self-esteem and increases the level of

anxiety or depression. Our brains, in response to such technologies, release dopamine whenever we receive a social media like or a gaming achievement which eventually reinforced habit-form behavior. And, therefore, excessive use of the rewards systems may result in the addition-like behaviors and negative mental health impact.

We continually peer into our devices, fearing we'll miss out on social events, or the good things that may happen without us. This anxiety can cause fear and make us to an extraordinary extent user technology. By comprehending these psychological factors, we establish strategies for healthier use of technology and subsequently reduce technology-induced mental health issues.

Technology Usage & Mental Health Problems

Individual differences, like personality traits and cognitive styles, influence how technology use affects mental health: Individual differences, like personality traits and cognitive styles, influence how technology use affects mental health:

1. Personality Traits: Some like to use technology more than others, and this is linked with the different personalities of people. Traditionally, however, extroverts are more likely to enjoy social interactions on social media since being next to people fills them with energy. Such even-tempered person might become mentally tired due to abundant-social-media if socializing too intensively which leads to feeling loss and reduced well-being.

2. Cognitive Styles: The issue of cognitive styles is also very important as cognitive style may vary. Moreover, people with the analytical style of thinking would be more likely to choose games for problems and informative websites. Those are able to activate their brains to a better extent and possibly improve their cognitive skills too. While those who are more skilled at distraction or positive thinking may find it better rather than negative effects of social media, comparison with others who are more attractive and feel more inferiority could be experienced by those who dwell too much in their negative thoughts.

3. Emotional Regulation: Emotional regulation potential can both exacerbate and lessen technologies' effects on mental well-being, depending on skills. A person who is good at regulating the feelings may utilize Facebook or Instagram in a way which would be constructive for example by looking for positive content or engaging

with online communities that provide encouragement and understanding. On a negative note, those who are not competent enough to manage emotions might have problems all the activated by the online communication which causes rise in the stress and mental problems.

4. Motivational Factors: Another example I will provide is a different influencing factors at work. Some examples are employees that the click, type or swipe for over nine hours, might experience fewer negative mental health outcomes if they see their happiness from their online activities.

It can be said that through the comprehension of the fact that the individuality diversifications influence the interactions of technology use with mental health outcomes, interventions that are designed on a one on one basis can, therefore, be planned to satisfy the unique needs and preferences of the various users.

Design Features of Digital Platforms

Certain design features of digital platforms and interventions have been associated with improved mental health outcomes: Some certain elements of digital platforms and interventions are said to be doing better in promoting mental health compared to previous ones.

User-Friendly Interface: A site navigation that allows the visitors access information and services is meant to be simple and intuitive – so that the interactions with mental health interventions are easily accessible. To start with, these apps such as Headspace and Calm are available in wide use and with user friendly interface, texts with audio instruction and the guided programs; thus, one can relax their minds and fit these mindfulness activities to schedule.

Personalization: Supplying information which suit exactly what an individual needs and the individual could understands something more and that sounds intriguing. On the other hand, the apps able to motivate their users through the ability to set individual targets, monitor progress, and get customized advice, depending on the specific interests and challenges each user is facing. These aspects is the key that sustains the user's motivation to keep using the application.

Interactive Features: Introduction of interactivness into the neighboring behavioral mental health strategies aided by test, polls and exercises makes this educational and interactive thus improving engagement of the users and offering a great opportunity for active participation in these treatment

approaches. Examples of the above are MoodKit, and others with the common factor of providing users with applications tools for interactive moods assessment, development of coping approaches, and upgrading the mood variations into a positive cycle. Social Support and Community Building: Online community and media is the best medium for seeking the social support and creating a community is the best way to eradicate loneliness and gain an utmost advantage of the support group. The online groups, the supports groups and the app interface such as social networks you can meet with people that have the same situations . Together they will be able to share experiences, wisdom and good times when needed while they also give and receive emotional aid with one another when things are challenging.

Gamification: It is plausible with the integration of these elements like points, badges, and rewards, that one give people more excitement to adhere and keep their mental health programs. Whereas video game apps such as SuperBetter and Happify apply the gamification elements to involve more users to use the positive aspects of the game that turns them into the overcomer of the negative thoughts by utilizing goal-setting games engagement and friendly interactive feature.

These design features interact with user characteristics and preferences in various ways:These design features interact with user characteristics and preferences in various ways:

- Different users, who have varying total of digital literacy, may select the platforms with simplest interface and stretch-by-stretch guidance.
- In the case of individuals with heterogenerous dynamics, they may be served with multilingual aid and culturally oriented content.
- To some users, being anonymous in on-line communities might suit best, while to others, getting a chance to add their friends family and neighbors to the support network offered by social media might happen to be the most appealing option.
- People who are having a particular mental health issue or a definite target in their treatment may choose a system which has a variety of evidence-based interveners specified or designed for these specified inquiries.

Connecting different components and encompassing user-centered design guidelines would enable the platforms and interventions to be adjusted, meeting the demanded user's increasing needs and preferences. This would immensely contribute to the betterment of mental health outcomes in the end.

Comparative Effectiveness of Different Digital Interventions in Promoting Mental Well-Being

The efficacy of web-based interventions for psychological health often depends on to whom such interventions are offered, as well as a number of influencing circumstances.
There are different kinds of support digital intervention which those can seem like mindfulness and online support groups, work in uneven ways to different people. Take for example several individuals like meditation apps doubtlessly effect stress reduction. When someone else may rather have structured therapy session that help manage anxiety. The sweat-intensive workouts into daily routine could be a critical component of the health-promotion intervention. The persons that are actively in online groups or complete the daily exercises have higher tendency of benefiting from such process rather than the ones who only view the activities as a pass time.

While specific digital interventions tailored to different needs are more effective, they share the same goal of attributing significance to the students' lives. Correspondingly, psychological mobile applications that supply content in more than one language or that pinpoint issues that are most impactful to certain groups might more likely of being used by such groups. Access and availability of healthcare on the other hand are important. The general public may face difficulty in digital resources access for the reason of the availability of internet connection or maybe devices themselves, which also obstruct the benefits that can be gained.

The social position of the digital audience is another factor. Technologies can be the paintsbrush for some discomforted; others might find them harder to catch; still it potentially takes people away from the impact by disengaging them. In this context, the burden of mental health illness influences this. Those, whose mood is of moderate nature, may get by self-guided methods of healing, while the serious symptoms case should be clinically followed. Cultural factors also matter. This strategy of congruence imparts credit to those interventions well-aligned with those cultural

beliefs regarding mental health, and they will be held in higher esteem and ultimately be more successful within those communities.

Potential Risks and Ethical Considerations

The bringing together of technology to mental health medication puts forward some risks and ethical issues.

Privacy and Data Security: Computer based interventions are known to deal with private matters, which could be an access or a loss in security and legitimacy. Take, as an example, mental health app that requires to collect data from its users. Its information security might face a threat and as a result, all the users' data is exposed.

Equity and Access: Unfortunately, not everybody has equal technological access or the ability to use it efficiently, which might create a serious problem in the situation, when the therapy service delivery depends on technology development. There will be no assistance for such groups which might lead to a situation where they become helpless and in need of resources. For instance, people that lives in remote areas where the internet access is limited may find it hard that they can attend their online therapy services.

Quality and Efficacy: Some digital interactions that burgeon can hold the promulgation of problematic habits or have no evidence-based principals. If there is a lack of guidance, people will not necessarily resort to useful strategies and treatments but those exerting harmful effects that ultimately yield negative outcomes. One case is an imaginary app that avails unproven treatments for depression without getting the necessary endorsement from health professionals.

To ensure responsible and ethical use of digital interventions in mental health care:To ensure responsible and ethical use of digital interventions in mental health care:

Data Protection: Use strong security measures to protect personal information of the users and apply privacy perimeters duly. An example is that mental health apps need to have a system which can encrypt data and must meet the privacy policy requirements such as GDPR or HIPAA in order to maintain user privacy.

Accessibility: Make the systems easy of use, by incorporating user interfaces having a range of accessibility features that are applicable to persons with different limitations and technical capabilities. The services (offered) could include catering to those users that need offline access as well as making provisions for those who have disabilities. Evidence-Based Practices: Emphasize that the digital interventions are anchored on substantial scientific evidence and adhere to ethical code of conduct. Comprehensive evaluations aimed at verifying the product is effective and safe; regularly publish the findings to users.

Informed Consent: Inform users for their data and interventions used before gaining their consent. Truly share the goal, dangers, and conveniences of the initiative so that users to be able to choose in case they want to participate.

Professional Oversight: The inclusion of mental health professionals in the program design incorporate digital interventions. Make provision sufragated to the users which enable the seeking of human support and that the professionals are sufficiently equipped to provide digital care for mental health.

Cultural Sensitivity: Culturally, diversity can be considered while developing and applying the programs meant to be delivered digitally. Develop interventions that will be sensitive to culture and age and able to address the differing needs of the different   groups.

Conclusion

This paper is going to examine in details the complex relationship of psychology and technology with a dominance on its effect on the mental health. By way of cross-disciplinary methodology incorporating concepts from psychology, interaction design, and digital health, we have unearthed some very interesting truths related to psycho-technological interface and how it affects people at mental level. Through these findings we stress the need to explore the complexity of the relationship between the diverse aspects of an individual, technological characteristics, and surrounding factors for a holistic understanding of behaviour and technology health outcomes. Our research indicating the psychological mechanics behind this use to the efficacy of digital interventions for mental health promotion, showed that different sides of this relationship are clear. Nonetheless, this research emphasizes the need for ethical concerns and user-centered design during the processes of the development, testing and deployment of technologies for mental health solutions. Through identifying security issues and

dilemmas concerned with ethics, and giving priority to the users' needs and experiences, we can build efficient and acceptable digital solutions that will enhance mental health. With the progression of time, it is vital to keep exploring this dynamic field by taking into account the technologically-oriented world through which many challenges of mental health are evolving. Future research issues could be more deeply dived in the long-term impacts of digital interventions, the culture and context discrepancies or the improvement of the theoretical frameworks in this subject. In the final analysis, exploiting the complementary nature of tech and the human mind allows us to use the advanced technologies to support people and contribute to improved mental health outcomes and a healthier and technology-integrated society. We will do this by working at one go through multidisciplinary, internal and community means, so as to achieve a future where technology aims at mental well being in all its forms.

THE END

References

Anderson, M., & Rainie, L. (2018). The Future of Well-being in a Tech-Saturated World. Pew Research Center. https://www.pewresearch.org/internet/2018/04/17/the-future-of-well-being-in-a-tech-saturated-world/

Firth, J., Torous, J., Nicholas, J., Carney, R., Pratap, A., Rosenbaum, S., Sarris, J., & Gorczynski, P. (2017). The efficacy of smartphone-based mental health interventions for depressive symptoms: a meta-analysis of randomized controlled trials. World Psychiatry, 16(3), 287–298. https://doi.org/10.1002/wps.20472

Linardon, J., Cuijpers, P., Carlbring, P., Messer, M., Fuller-Tyszkiewicz, M., & Sui, M. (2019). The efficacy of app-supported smartphone interventions for mental health problems: a meta-analysis of randomized controlled trials. World Psychiatry, 18(3), 325–336. https://doi.org/10.1002/wps.20673

Luxton, D. D., Kayl, R. A., & Mishkind, M. C. (2012). mHealth data security: the need for HIPAA-compliant standardization. Telemedicine and e-Health, 18(4), 284–288. https://doi.org/10.1089/tmj.2011.0200

Primack, B. A., Shensa, A., Sidani, J. E., Whaite, E. O., Lin, L. Y., Rosen, D., Colditz, J. B., Radovic, A., & Miller, E. (2017). Social media use and perceived social isolation among young adults in the U.S. American Journal of Preventive Medicine, 53(1), 1–8. https://doi.org/10.1016j.amepre.2017.01.010

Rizzo, A., Difede, J., Rothbaum, B. O., Johnston, S., McLay, R. N., & Reger, G. M. (2017). VR PTSD exposure therapy results with active duty OIF/OEF combatants. Studies in Health Technology and Informatics, 219, 97–101.

Torous, J., Nicholas, J., Larsen, M. E., Firth, J., Christensen, H., & Tye, M. (2020). Clinical review of user engagement with mental health smartphone apps: evidence, theory and improvements. Evidence-Based Mental Health, 23(3), 87–90. https://doi.org/10.1136/ebmental-2020-300168

Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. Preventive Medicine Reports, 12, 271–283. https://doi.org/10.1016/j.pmedr.2018.10.003

Iniesta, R., Stahl, D., McGuffin, P., & Tripp, C. (2016). Machine learning, statistical learning and the future of biological research in psychiatry. Psychological Medicine, 46(12), 2455–2465. https://doi.org/10.1017/S0033291716001001

Nicholas, J., Bell, I. H., Thompson, A., Valentine, L., Simsir, P., & Sheppard, M. (2019). An evaluation of a digital mental health platform in public mental health services: insights for future adoption. Australian & New Zealand Journal of Psychiatry, 53(11), 1083–1093. https://doi.org/10.1177/0004867419878961

Torous, J., Keshavan, M., & Gutheil, T. (2020). Promise and perils of digital psychiatry. Asian Journal of Psychiatry, 47, 101853. https://doi.org/10.1016/j.ajp.2019.101853

Tremblay, M. S., et al. (2017). Systematic review of sedentary behaviour and health indicators in school-aged children and youth: an update. Applied Physiology, Nutrition, and Metabolism, 41(6), S240–S265. https://doi.org/10.1139/apnm-2016-0630

Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. Preventive Medicine Reports, 12, 271–283. https://doi.org/10.1016/j.pmedr.2018.10.003