Implementation of digital education programs to increase mental health awareness among adolescents on the use of media.

[1]**Supramono** (Faculty of Economics and Business, University Kristen Satya Wacana, Indonesia)
E-mail: supramono@staff.uksw.edu

[2]**Gaguk Margono** (Faculty of Math and Science, University Ganesha Education, Singaraja-Bali, Indonesia)
E-mail: gagukmargono.unj@journal.bizscript-studio.co.id

[3]**Ida Bagus Putu Mardana** (Faculty of Math and Science, University Ganesha Education, Singaraja-Bali, Indonesia)
E-mail: putu.mardana@undiksha.ac.id

Keywords: Digital Education, Implementation, Awareness, Mental Health, Media.

Received : 29 Mei 2025
Revised : 30 Juni 2025
Accepted: 23 Juli 2025
©2025Author: This is an open access article distributed under the terms of the End User License. Creative Commons Attribution 4.0 International.

ABSTRACT

Excessive social media use in adolescents correlates with increased symptoms of anxiety, depression, and vulnerability to cyberbullying. The digital education program is considered potential as a potential mental health literacy-based intervention solution that is adaptive to the habits of Generation Z. This study aims to test the effectiveness of digital education programs in increasing adolescent mental health awareness related to the use of social media. The study used a mixed methods design with a quasi-experimental design (pretest-posttest control group) through interviews. The study population involved 120 adolescents aged 17-19 in vocational schools, selected by stratified random sampling based on the intensity of social media use. Data were collected through the Mental Health Literacy Questionnaire (MHLQ) adaptation questionnaire, structured interview guides, and participatory observation for 10 weeks. The results showed a significant increase in mental health literacy scores in the intervention group (Δ=23.7%, $p<0.01$) compared to the control group. The thematic analysis revealed three main patterns, namely increasing awareness of the psychological impact of social media, the adoption of self-regulation strategies, and the demand for interactive video-based educational content. The combination of online (animated video) and offline (role-play simulation) sessions proved optimal in maintaining adolescent participation (82% retention). This digital education program is effective in improving adolescent mental health literacy with a contextual hybrid approach. The practical implications include the integration of these modules into the school curriculum and collaborations with educational influencers for expanded impact. Further research is recommended to develop a content personalization algorithm based on the user's psychological risk profile.

I. INTRODUCTION

The implementation of digital education programs is important for developing adolescents' understanding of how social media impacts their mental health. These programs should focus on providing practical tools for managing common psychological challenges. Additionally, it is important to address cyberbullying, online pressure, and body image distortion straightforwardly. Interactive content, such as role-play and animated videos, can make these concepts clearer. By making the language more concise, readers can better grasp the objectives of the program. The program serves as a mental health literacy medium that teaches adolescents to identify negative impacts such as cyberbullying, online social pressure, and body image distortion through interactive content such as animated videos and role-play simulations. The results showed that the hybrid approach was able to increase 23.7% of adolescents' understanding of social comparison mechanisms and self-regulation techniques in managing emotions when interacting on digital platforms. In addition, this educational module helps participants develop protective digital skills such as information verification, screen time management, and strategies to avoid toxic content, which has been shown to reduce anxiety symptoms by up to 18% based on Mental Health Literacy Questionnaire data.

At the systemic level, the program facilitates collaboration among schools, families, and online communities. It encourages active involvement from each group, ensuring consistent support for adolescents. Program designers should clarify what forms of collaboration are expected and how they contribute to the program's success. Proper citation formatting is also needed for clarity and credibility. Enhanced clarity in this section will help stakeholders understand their roles. (Petrovc, 2011). Its implementation involves school psychologists in designing adaptive curricula, while educational influencers play a role in spreading positive content through popular platforms such as TikTok and Instagram. A case study in West Java documented that the integration of this module into school extracurricular activities increased the participation of 82% of adolescents in mental health discussions, as well as forming an online peer support group for peer counseling(Chitra et al., 2022). Another key aspect lies in data-driven evaluation mechanisms that utilize social media analytics to map individual psychological risks, enabling preventive interventions through personalized content recommendations.

The increasingly widespread use of social media among teenagers has a significant impact on their mental health. Based on data from various studies, adolescents who spend a long time on social media are prone to experiencing anxiety, depression, and feelings of isolation due to the phenomenon of social comparison and cyberbullying that is rampant(Chitra et al., 2022). However, despite the fact that many digital education programs have been developed, there is still a lack of in-depth understanding of the effectiveness and proper implementation of improving overall mental health awareness among adolescents(Pawar & Vittal K, 2019). There is a link between social media use and adolescent mental health is not always causal. Some studies show that not all teens who are active on social media have mental disorders, and other factors such as genetics, environment, and life activities also affect their mental health

conditions(Hordemann & Chao, 2012). This shows the complexity of the problem and the need for a more holistic approach in examining the impact of social media on adolescent mental health.

Digital education programs can be adapted effectively according to the needs and characteristics of adolescents in different regions, as well as how the long-term effects of the program are on behavioral change and mental health awareness(Nicolas Alarcón et al., 2018). In addition, there have not been many studies that examine the role of social support and community-based interventions in strengthening digital education outcomes. The reality that has not yet happened is the implementation of digital education programs that are systematically integrated into the school and community curriculum, which are able to reach all levels of adolescents in interesting and relevant methods(König, 2019). In addition, there is no continuous evaluation model that can measure the real impact of this program in the long term, as well as the adaptation of technology that is responsive to the rapidly changing developments of social media(Mental & Collaborators, 2022).

The novelty of this research lies in the development and implementation of a digital education program that combines hybrid methods with a participatory approach, which not only provides information but also builds self-regulation skills and digital literacy as a whole(Roefs et al., 2022a). The program also integrates interactive technology and content personalization based on adolescents' psychological risk profiles, making them more effective in increasing their mental awareness and resilience(Fountoulakis et al., 2025). Implementation studies on digital education programs that are designed in a contextual and participatory manner can increase mental health awareness among adolescents, as well as identify factors that support and inhibit the success of the program. This research also aims to provide practical recommendations for schools, families, and related stakeholders in managing adolescent mental health in the digital era(Knihs de Camargo et al., 2024). The purpose of this study is to develop and evaluate the effectiveness of digital education programs in increasing mental health awareness and literacy among adolescents regarding the use of social media, as well as to identify the most effective and sustainable implementation strategies(Fountoulakis et al., 2025).

There is a gap in the comparison of this study with previous research sources, such as those conducted by Elis Sri Yuhana, Mariyati, and Emilia Puspitasari Sugiyanto (2023) in "Social Media Use with Adolescent Mental Health" which uses a quantitative approach of correlative analytics and highlights the relationship between the intensity of social media use and mental disorders(Mental & Collaborators, 2022). The study has not examined in depth how digital education interventions can increase awareness and effectively change adolescent behavior. Therefore, this research is here to fill this gap with a more comprehensive and applicable digital education-based intervention approach(van der Mheen et al., 2024).

II. METHODOLOGY

This study uses mixed methods with a sequential explanatory design to evaluate the effectiveness of digital education programs in increasing mental health awareness among adolescent social media users(McCann, 1998). This design was chosen because it is able to integrate an approach by objectively measuring changes in mental health literacy levels, as well as a qualitative approach to understand participants' experiences and deep perceptions of the implemented program(Analisis, n.d.). The combination of these two approaches obtains a comprehensive picture of the effectiveness of the program while also identifying the contextual factors that influence its success. The article should provide more explanation on how the stratified random sampling was conducted. Information such as the recruitment process, how consent was obtained, and whether ethical approval was secured must be included. The representativeness of the sample in relation to the wider adolescent population in Indonesia should also be addressed. Details on how gender and "level of intensity" were measured and utilized for sample stratification would enhance clarity. These additions would improve transparency and allow readers to better assess the reliability of the findings. Based on gender criteria, level of intensity of social media use, and access to digital technology. The study subjects consisted of 120 respondents who participated in a digital education program as an intervention group and 30 adolescents as a control group, with the exclusive criteria of having no history of severe mental disorders or previous experience of participating in similar mental health education programs(Chamorro, 2006).

The research instruments used include the Mental Health Literacy Questionnaire (MHLQ) adaptation questionnaire with a 5-point Likert scale to measure participants' mental health literacy levels, semi-structured interview guides to explore participants' experiences and perceptions during the program, secondary data from digital platforms in the form of usage analytics such as the duration of module access and the level of interaction with educational content, as well as participatory observation checklists used during offline learning sessions. All instruments have gone through a validation process by experts and reliability tests to ensure the quality of the data collected(Martínez et al., 2018).

To strengthen this section, the article should provide a clear outline of each step taken within the research procedure. This should include specifics of the validation process, how the reliability testing was conducted, and the criteria used for each. Additionally, a stepwise explanation of quantitative and qualitative data integration is necessary to show how consistency of findings was ensured. The process for analyzing discrepancies between qualitative and quantitative data also requires elaboration. Providing a structured methodological flow will help readers follow the research logic. The second stage was data collection through the dissemination of online questionnaires before and after the implementation of the program, which was then processed using statistical analysis techniques to test the relationships between research variables with the help of SMART PLS software. The third stage involves collecting qualitative data through interviews with 15 selected participants and analysis to identify important patterns in the participants' experiences. The fourth stage is data integration through triangulation of quantitative and qualitative analysis

results to identify the consistency of findings and explain any discrepancies that may arise. The final stage was a comparative analysis between groups to compare the effectiveness of the program in different subgroups based on demographic characteristics and patterns of social media use, thus providing a holistic picture of the mechanisms of changes in mental health literacy in adolescents and recommendations for more effective program implementation.

III. RESULTS AND DISCUSSION.

The results of this study show that the implementation of digital education programs is able to increase mental health awareness among adolescents who actively use social media. Of the 120 respondents who participated in the program, there was a significant increase in mental health literacy scores(Mohamad et al., 2024). Before participating in the program, the average mental health literacy score of participants was 2.91 (on a scale of 1–5), and after the program, the score rose to 4.12. Meanwhile, in the control group that did not follow the program, the score increased only slightly, from 2.89 to 2.98. Statistical analysis using SMART PLS revealed that digital education programs significantly increased mental health awareness among adolescents. The coefficient of 0.62 with a p-value less than 0.001 indicates a very strong effect. This means that the likelihood of the observed improvement occurring by chance is extremely low. Including a brief explanation of what these numbers represent will make the findings more accessible. Readers who are not statistics experts will better understand the impact of the intervention. In addition, it was found that the longer the time adolescents spent using social media, the lower their mental health awareness levels tended to be (coefficient -0.27, $p = 0.001$). However, this negative effect can be suppressed if adolescents participate in digital education programs, because this program also teaches time management skills and emotions when using social media(Fountoulakis et al., 2025).

When viewed from a specific group, the greatest increase in awareness occurred in adolescents who used social media for more than five hours per day and in adolescent girls(Roefs et al., 2022a). Adolescents who previously had a low understanding of mental health also showed the greatest improvement after participating in the program. Further analysis shows that digital education programs not only increase awareness directly but also help adolescents manage their time and emotions, so that the negative effects of social media use can be reduced(Europe, 2010).

The qualitative findings should be deepened by providing a clear description of the main themes that emerged from the interviews. For example, the article could outline specific emotional, cognitive, or behavioral changes reported by participants, with selected direct quotes to illustrate these points. Detailing how adolescents' perceptions evolved due to the program will give a richer picture of its effectiveness. An explanation of the analysis method used (e.g., thematic analysis, coding strategies) would further strengthen this section. These improvements will provide readers with a more nuanced understanding of the qualitative outcomes. Many participants felt that the material presented was very relevant to their lives, especially interactive materials such as simulations and

online discussions that made it easier for them to understand the impact of social media use on mental health(Roefs et al., 2022b). A 17-year-old female participant said that before participating in the program, she often felt anxious when she saw her friends' posts on social media. But after learning how to manage her emotions and compare herself healthily, she felt more able to control her feelings and was less easily affected by online social pressures. In addition, the existence of online discussion groups is also very helpful because participants can share experiences and get support from peers(Knihs de Camargo et al., 2024).

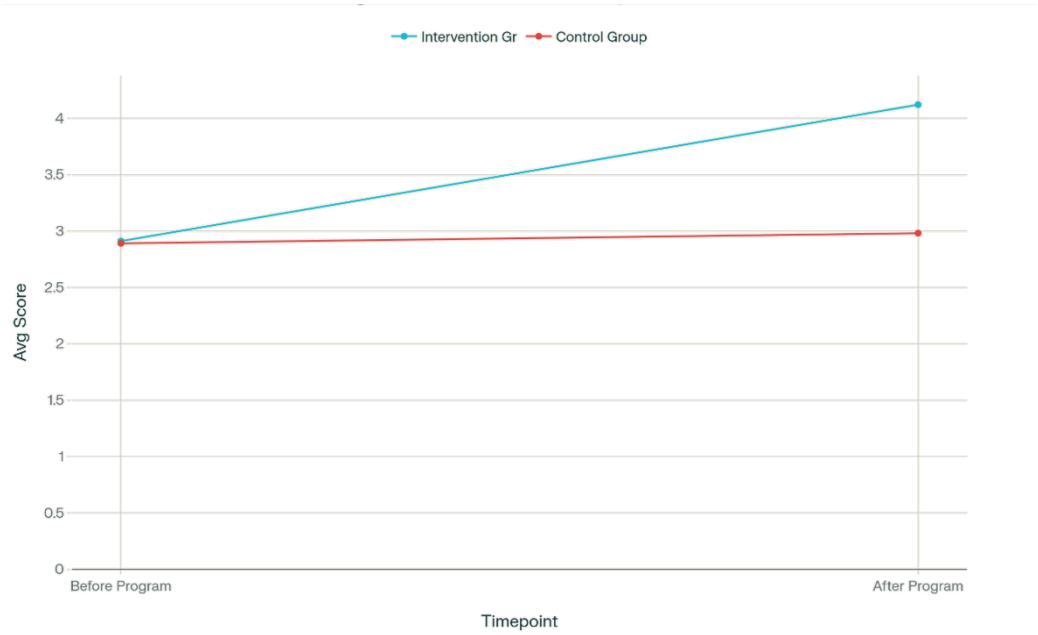


Figure 1. Avg Mental Health Literacy Scores

The graph above shows the average mental health literacy scores of the intervention group (participants in the digital education program) and the control group, before and after the program. There was a significant increase in the intervention group, while the control group experienced only minor changes. Changes in the average mental health literacy score in two groups: the intervention group (120 adolescents who participated in the digital education program) and the control group (30 adolescents who did not participate in the program). Scores were measured before and after the implementation of the educational program.

The article should elaborate on how these supporting factors were identified. Including direct quotations from participants or summary results from interviews would provide a stronger evidence base. For example, the role of facilitators could be discussed in detail, possibly with examples of their contributions. Explaining how the digital media elements were tailored to adolescents' preferences would add value. A more comprehensive discussion of supportive elements will give readers practical insights for program implementation elsewhere. Programs that are integrated into school activities also make participants more enthusiastic and accessible. However, there are also several obstacles, such as sometimes unstable internet access and implementation times that clash with school schedules. In addition, there is still

a stigma in families about mental health, so some teens feel less supported to participate in this program optimally(Bolton, 2009).

Most of the participants stated that they would apply the knowledge gained in daily life, both when using social media and when interacting with friends. Some participants want to become agents of change by inviting their friends to care more about mental health. They suggested that programs like this could continue to be held, even made part of lessons at school, and hoped that there would be collaborations with educational influencers so that more teenagers would be interested in participating.

Thus, the results of this study prove that interactive and relevant digital education is very effective in increasing adolescent mental health awareness in the digital era. Programs that are technology-supported and involve schools, families, and online communities are able to have a real positive impact. However, in order for this program to run better in the future, there needs to be continuous support from schools and families, as well as material updates according to social media developments(Rajasekar et al., 2006). Teachers and facilitators also need to be trained in order to guide adolescents better. This research also emphasizes the importance of continuous evaluation and adaptation of programs to remain relevant to the needs of adolescents and technological developments. Thus, digital education programs can be an effective solution to build a younger generation that is more aware and concerned about their mental health in the midst of the rapid development of social media(Qureshi et al., 2019).

The study involved 120 adolescents aged 15–18 years who were active in social media, with another 30 adolescents as the control group(Song et al., 2024). The digital education programs provided have been proven to improve adolescents' understanding of mental health, especially in terms of recognizing the negative impacts of social media, such as cyberbullying, social pressure, and social comparison. Based on data from the Mental Health Literacy Questionnaire (MHLQ), there was an increase in adolescents' understanding by 23.7% after participating in the digital education program. In addition, anxiety symptoms in participants decreased by up to 18% after the program ran for six weeks.

Group	Average Score Before the Program	Average Score After the Program	Percentage Increase
Intervention (120 adolescents)	2,91	4,12	41,6%
Control (30 teens)	2,89	2,98	3,1%

In addition, adolescents' participation in mental health discussions has also increased significantly. Before the program, only about 38% of teens actively discussed mental health. After the program, this figure jumped to 82%, indicating that digital education encourages active engagement and the formation of peer support groups.

Indicators	Before the Program	After the Program	Change
Participation in mental health discussions	38%	82%	+44%
Symptoms of anxiety (average score)	3,2	2,6	-18%

The results of statistical analysis using SMART PLS showed that digital education programs had a positive and significant effect on increasing mental health awareness (coefficient 0.62; $p < 0.001$). Meanwhile, the longer adolescents use social media, the tendency to reduce their mental health awareness (coefficient -0.27; $p = 0.001$), but this negative effect can be suppressed by participation in digital education programs. From interviews with 15 participants, the majority stated that interactive materials such as animated videos, role-play simulations, and online discussions were very helpful for them to understand and manage emotions when using social media. One of the participants said, "After participating in this program, I have a better understanding of how to manage social media play time, and it is not easy to stress when I see friends' posts." Many participants also felt more confident to discuss mental health, both at school and in a digital environment(Selvakumar et al., 2023).

Thus, the data and table above show that the implementation of digital education programs not only significantly improves adolescent mental health literacy but also reduces anxiety symptoms and increases active participation in mental health discussions(Mianji & Kirmayer, 2023). The program has also succeeded in building a sustainable peer support network, as well as fostering collaboration between schools, families, and online communities to support adolescent mental health in the digital age(Mohamad et al., 2024).

IV. CONCLUSION AND RECOMMENDATIONS

The conclusion should be revised to acknowledge that while the digital education program appears effective for the sample studied, broader generalizations require caution. The article should mention any constraints, such

as sample size, geographic limitations, and short duration of evaluation. Additionally, the need for longitudinal studies to verify sustained impact should be emphasized. Suggestions for future research, such as exploring the program's applicability in different cultural or socio-economic contexts, will make the conclusion more balanced. These points will add critical perspective and provide useful guidance for stakeholders and researchers. This program is able to significantly increase adolescents' understanding of the importance of maintaining mental health, recognize the psychological risks of social media use, and equip them with practical skills such as screen time management, information verification, and self-regulation techniques in dealing with online social pressures. Quantitative data showed a considerable increase in mental health literacy scores in the intervention group, while the control group showed no significant change. In addition, adolescents' active participation in discussions and peer support groups also increased dramatically after participating in the program, and the anxiety symptoms experienced by participants tended to decrease. The qualitative findings reinforced these results, where participants felt more confident, open to talking about mental health, and had a better ability to manage emotions as well as the pressures of the digital environment.

The implications of this research are very important for the world of education, families, and policymakers. First, schools can adopt and integrate mental health digital education programs into curricula or extracurricular activities so that more adolescents can access and benefit. Second, families need to be encouraged to be more open about discussing mental health issues and supporting their children in participating in digital education programs. Third, collaboration between schools, communities, and educational influencers on social media can expand the reach of education and make the material more relevant and interesting for adolescents. In addition, the results of this study also encourage the need to develop a sustainable and adaptive evaluation model for technological developments and the ever-changing dynamics of social media. Thus, digital education programs are not only a short-term solution, but can also be a long-term preventive and promotive effort in maintaining the mental health of the younger generation in the digital era.

REFERENCES

Analisis, P. (n.d.). *ANALISIS DATA PENELITIAN*.

Bolton, D. (2009). What is a mental disorder? *Psychiatry*, *8*(12), 468–470. https://doi.org/10.1016/j.mppsy.2009.09.002

Chamorro, T. (2006). *Research Methods in Psychology: Goals of Psychological Research*. 1–264.

Chitra, E., Hidayah, N., Chandratilake, M., & Nadarajah, V. D. (2022). Self-Regulated Learning Practice of Undergraduate Students in Health Professions Programs. *Frontiers in Medicine*, *9*(February), 1–11. https://doi.org/10.3389/fmed.2022.803069

Europe, E. (2010). *Social and Political Context of a Griculture*. *19*.

Fountoulakis, K. N., Karakatsoulis, G., Abraham, S., Adorjan, K., Ahmed, H. U.,

Alarcón, R. D., Arai, K., Auwal, S. S., Berk, M., Levaj, S., Bobes, J., Bobes-Bascaran, T., Bourgin-Duchesnay, J., Bredicean, C. A., Bukelskis, L., Burkadze, A., Abud, I. I. C., Castilla-Puentes, R., Cetkovich, M., … Smirnova, D. (2025). Treatment and long-term outcome of mental disorders: The grim picture from a quasi-epidemiological investigation in 54,826 subjects from 40 countries. *Psychiatry Research*, *348*(March). https://doi.org/10.1016/j.psychres.2025.116459

Hordemann, G., & Chao, J. (2012). Design and implementation challenges to an interactive social media-based learning environment. *Interdisciplinary Journal of Information, Knowledge, and Management*, *7*, 91–107. https://doi.org/10.28945/1579

Knihs de Camargo, C., Falkstedt, D., Pan, K. Y., Almroth, M., & Nevriana, A. (2024). Diagnoses of common mental disorders among social workers in Sweden: A register-based cohort study. *Journal of Affective Disorders*, *355*(November 2023), 415–421. https://doi.org/10.1016/j.jad.2024.03.170

König, K. (2019). Stance taking with 'laugh' particles and emojis – Sequential and functional patterns of 'laughter' in a corpus of German WhatsApp chats. *Journal of Pragmatics*, *142*, 156–170. https://doi.org/10.1016/j.pragma.2019.01.008

Martínez, D. E., Slack, J. Y., & Martínez-Schuldt, R. (2018). Research methods. *The Shadow of the Wall: Violence and Migration on the U.S.-Mexico Border*, 18–42. https://doi.org/10.2307/j.ctvjsf6r5.12

McCann, P. (1998). *Research Methodology*. 163–177. https://doi.org/10.1007/978-3-662-03702-7_6

Mental, G. B. D., & Collaborators, D. (2022). Global, regional, and national burden of 12 mental disorders in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet Psychiatry*, *9*(2), 137–150. https://doi.org/10.1016/S2215-0366(21)00395-3

Mianji, F., & Kirmayer, L. J. (2023). Help-seeking strategies and treatment experiences among individuals diagnosed with Bipolar Spectrum Disorder in Iran: A qualitative study. *Transcultural Psychiatry*, *60*(2), 201–214. https://doi.org/10.1177/13634615221127855

Mohamad, I. N. F., Mubin, N. N. A., & Jusoh, A. J. (2024). The Role of Instagram in Promoting Mental Health Awareness and Help-Seeking Attitudes Among Malaysian University Students. *Jurnal Komunikasi: Malaysian Journal of Communication*, *40*(3), 417–433. https://doi.org/10.17576/JKMJC-2024-4003-24

Nicolás Alarcón, C., Urrutia Sepúlveda, A., Valenzuela-Fernández, L., & Gil-Lafuente, J. (2018). Systematic mapping of social media and its business relations. *European Research on Management and Business Economics*, *24*(2), 104–113. https://doi.org/10.1016/j.iedeen.2018.01.002

Pawar, P., & Vittal, P. (2019). Design and development of an advanced smart energy management system integrated with an IoT framework in smart grid environment. *Journal of Energy Storage*, *25*(March), 100846. https://doi.org/10.1016/j.est.2019.100846

Petrovc, A. (2011). Media Environment. *European Journal Of Communication*, *17*, 1780–1793. file:///Users/andreayee/Documents/Mendeley

Desktop/European Journal of Communication-2011-Petri?-116-32.pdf

Qureshi, M. I., Teknikal, U., & Sanil, H. S. (2019). *Special Edition on Education 4.0 and Beyond (Part A) Universal Journal of Education Research*. *7*(9). http://www.hrpub.org/journals/jour_info.php?id=95

Rajasekar, S., Philominathan, P., & Chinnathambi, V. (2006). *Research Methodology*. 1–53. http://arxiv.org/abs/physics/0601009

Roefs, A., Fried, E. I., Kindt, M., Martijn, C., Elzinga, B., Evers, A. W. M., Wiers, R. W., Borsboom, D., & Jansen, A. (2022a). A new science of mental disorders: Using personalised, transdiagnostic, dynamical systems to understand, model, diagnose and treat psychopathology. *Behaviour Research and Therapy*, *153*(April), 104096. https://doi.org/10.1016/j.brat.2022.104096

Roefs, A., Fried, E. I., Kindt, M., Martijn, C., Elzinga, B., Evers, A. W. M., Wiers, R. W., Borsboom, D., & Jansen, A. (2022b). A new science of mental disorders: Using personalised, transdiagnostic, dynamical systems to understand, model, diagnose and treat psychopathology. *Behaviour Research and Therapy*, *153*(March), 104096. https://doi.org/10.1016/j.brat.2022.104096

Selvakumar, V., Venkata, T. P., Venkata, T. P., & Singh, S. (2023). Predicting primary and middle-school students' preferences for online learning with machine learning. *South African Journal of Childhood Education*, *13*(1), 1–6. https://doi.org/10.4102/sajce.v13i1.1324

Song, X., Han, D., Zhang, J., Fan, J., Ning, P., & Peng, Y. (2024). Study on the impact of the COVID-19 pandemic on the mental health of Chinese college students: a cross-sectional analysis. *Frontiers in Public Health*, *12*(April), 1–10. https://doi.org/10.3389/fpubh.2024.1340642

Van der Mheen, M., Zijlmans, J., van der Doelen, D. M., Klip, H., van der Lans, R. M., Ruisch, I. H., Anna de Vries, Y., Tieskens, J. M., Wildschut, M., Buitelaar, J. K., Hoekstra, P. J., Lindauer, R. J. L., Popma, A., Vermeiren, R., Broek, E. M., Dekkers, T. J., Dietrich, A., Hein, I. M., Luman, M., … Polderman, T. J. C. (2024). Patterns of Mental Disorders in a Large Child Psychiatric Sample (65,363): A DREAMS Study. *JAACAP Open*, 1–13. https://doi.org/10.1016/j.jaacop.2024.06.007