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DIGITAL RESOURCES AND MINDFULNESS PRACTICES AS A MEANS OF DEVELOPING PROFESSIONAL RESILIENCE IN FUTURE PSYCHOLOGISTS

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INTRODUCTION

Contemporary conditions of professional activity for psychologists are characterised by a high level of uncertainty, emotional load and the constant encounter with human trauma, suffering and crises. Against the backdrop of global socio-economic transformations, digitalisation, and the full-scale war in Ukraine, the problem of professional burnout and psychological exhaustion among helping-profession practitioners is becoming especially acute. According to a systematic review of studies, almost 40% of applied psychologists demonstrate a high level of emotional exhaustion, which is considered the key component of the syndrome of professional burnout[1]. This means that without purposeful formation of professional resilience (hardiness) already at the stage of training, prospective psychologists enter the profession with high risks of rapid exhaustion and professional maladjustment.

An especially vulnerable group in this context is students in the major "Psychology" as future specialists, who simultaneously experience developmental crises, academic stress and – in the case of Ukraine – the consequences of war-traumatisation. Meta-analytical data regarding university students indicate that the prevalence of emotional exhaustion among university students is on average 55.4%, cynicism – 31.6%, and feelings of academic inefficacy – 30.9%, which points to a moderately high global level of "academic burnout"[2,3]. For future psychologists this is particularly critical, since their own difficulties with emotional regulation and stress-resilience will directly affect the quality of their future professional assistance[4].

[1] McCormack H., MacIntyre T., & others. The Prevalence and Cause(s) of Burnout Among Applied Psychologists: A Systematic Review. *Frontiers in Psychology*. 2018. 9. 1897.

[2] Rosales-Ricardo Y., Rizzo-Chunga F., Mocha-Bonilla J., Ferreira J. Prevalence of Burnout Syndrome in University Students: A Systematic Review. *Salud Mental*. 2021. 44(2). 91–102.

[3] Tomaszek K., & Muchacka-Cymerman A. Be Aware of Burnout! The Role of Changes in Academic Burnout among University Students. *International Journal of Environmental Research and Public Health*. 202. 18(15). 8055.

[4] O'Connor K., Dimitriou L., & others. Burnout in Mental Health Professionals: A Systematic Review and Meta-analysis of Prevalence and Determinants. *European Psychiatry*. 2018.

Ukrainian-specific conditions make this problem even more acute. Early national surveys in Ukraine (March 2022) showed that over half of the respondents reported symptoms of stress (52.7%), anxiety (54.1%) and depression (46.8%) in the first weeks of the full-scale invasion[5]. Subsequent studies of Ukrainian university students demonstrated extremely high levels of psychological disorders: in student samples up to 85.8% of cases reported symptoms of depression, 66.1% – anxiety, 56.9% – sleep disturbances and 48.1% – symptoms of post-traumatic stress disorder (PTSD)[6]. This not only reflects the scale of mental load on youth, but also means that a significant portion of future psychologists themselves carry traumatic experiences and are at elevated risk of maladaptation.

Under such conditions the concept of professional resilience for the future psychologist becomes a key meta-competency, integrating the capacity to maintain effectiveness, ethics and inner equilibrium in chronic stress, emotional overload and traumatic impact. Resilience in this context is not viewed as an innate trait, but as a dynamic system of self-regulation skills, the processing of experience, maintaining professional boundaries, resource replenishment and the ability to grow under difficult circumstances[7]. One of the priority tasks of professional training of psychologists becomes the creation of educational environments where mechanisms of such resilience are purposefully trained.

Scientific reviews of digital interventions in the domain of mental health have identified nearly 200 clinical trials of self-help apps for depression and anxiety, confirming their effectiveness in symptom reduction and in improving psychological well-being[8]. Individual meta-analyses show that mobile applications integrating cognitive-behavioural techniques, breathing exercises, mood diaries and mindfulness components demonstrate moderate effects in reducing symptoms of depression and anxiety compared to wait-list or inactive control conditions[9]. These data point to the significant potential of digital resources as tools supporting mental health both in the general population and among students.

[5] Polyvianaia M., Yachnik Y., Fegert J.M., Sitarski E., Stepanova N., Pinchuk I. Mental health of university students twenty months after the beginning of the full-scale Russian-Ukrainian war. *BMC Psychiatry*. 2025. 25.236.

[6] Ibid.

[7] Pinchuk I., Feldman I., Seleznova V., Virchenko V. Braving the dark: mental health challenges and academic performance of Ukrainian university students during the war. *Social Psychiatry and Psychiatric Epidemiology*. 2025.

[8] Babbage C.M., et al. Self-help digital interventions targeted at improving mental health: a systematic review. *Frontiers in Public Health*. 2022. 10. 946361.

[9] Linardon J., Anderson C., Messer M., Liu C., Torous J. Transdiagnostic-focused apps for depression and anxiety: a meta-analysis. *npj Digital Medicine.* 2025. 8. 443.

In this context, mindfulness practices attract special attention as a scientifically substantiated approach to developing resilience. A meta-analysis of studies among university students revealed a stable positive association between level of mindfulness and psychological resilience, which allows one to regard mindfulness as a key mechanism enhancing stress-tolerance and adaptive coping capacity[10]. Further meta-analytic reviews demonstrate that mindfulness-based interventions (MBIs) produce moderate effect sizes for increasing resilience in students and also contribute to reducing anxiety, depression and overall stress[11].

Of particular importance are data obtained specifically in samples of students of medical and psychosocial professions. Systematic reviews suggest that the use of mindfulness programmes among future helping-profession specialists leads to moderate reductions in stress levels and emotional exhaustion, and increases capacities for self-compassion, emotional regulation and mindful orientation to professional challenges[12]. This provides sufficient grounds to regard mindfulness not only as a general wellness technique, but as a targeted instrument for the formation of professional resilience of future psychologists.

The question of professional endurance of psychologists is closely tied to the phenomenon of burnout. Research among psychotherapists shows wide fluctuations in burnout prevalence – from 2–6% in early studies to over 50% in more recent samples, depending on context, measurement tools and criteria. Among applied psychologists the emotional exhaustion component appears as the most prominent risk factor, while emotional and personal resilience acts as a mitigating factor[13]. At the level of psychology students research indicates the formation of a "burnout risk profile" already during training, manifested as emotional exhaustion, cynical attitude to academic demands and perceived low academic efficacy[14].

[10] González-Martín A.M., Aibar-Almazán A., Rivas-Campo Y., Castellote-Caballero Y., Carcelén-Fraile M. Mindfulness to improve the mental health of university students: a systematic review and meta-analysis. *Frontiers in Public Health.* 2023. 11. 10726040.

[11] Dou J., Lian Y., Lin L., Asmuri S.N.B., Wang P., et al. Effectiveness of mindfulness-based interventions on burnout, resilience and sleep quality among nurses: a systematic review and meta-analysis. *BMC Nursing.* 2025. 24. 739.

[12] Madigan D.J., Kim L.E., Glandorf H.L. Interventions to reduce burnout in students: a systematic review and meta-analysis. *European Journal of Psychology of Education.* 2024. 39. 931–957.

[13] Cai Z., Mydin Kutty F., Amran M.S. The association between mindfulness and learning burnout among university students: a systematic review and meta-analysis. *European Journal of Educational Research.* 2025.

[14] Abulfaraj G.G., Upsher R., Zavos H.M.S., Dommett E.J. The impact of resilience interventions on university students' mental health and well-being: a systematic review. *Education Sciences.* 2024. 14. 510.

Thus, the combination of a heightened psychotraumatic background (particularly in Ukraine under conditions of war), academic stress, uncertainty about the future, and early manifestations of professional burnout creates an objective need to identify innovative, accessible, and evidence-based means for developing the professional resilience of future psychologists. Digital resources–mental-health mobile applications, online platforms, and interactive self-help programs–and the mindfulness practices integrated into them appear to meet these requirements, as they provide:

• accessibility (the possibility of use at any time and in any location, including during air-raid alerts or forced displacement);

• personalization (adaptation of the pace and content of exercises to individual user needs);

• interactivity (feedback, reminders, and gamification of the training process);

• scalability (the ability to reach large numbers of students without proportionally increasing staff resources).

At the same time, against the backdrop of the rapid expansion of the digital mental-health market, the professional community emphasizes the need for critical evaluation of the quality of such tools, standardization of implementation approaches, and the development of ethical use guidelines. Existing research indicates that the effectiveness of mobile mental-health applications strongly depends on user engagement, the clarity of the methodological framework, and the integration of digital interventions into broader educational and supervisory structures[15]. For the training of future psychologists, this means that digital resources and mindfulness practices should not be viewed as isolated "add-ons," but rather as components of a holistic model for fostering professional resilience.

The relevance of this topic is further reinforced by the urgent need to strengthen the professional resilience of future psychologists amid wartime and post-war challenges, increasing stress loads, and the rapid digitalization of the educational environment, which necessitate evidence-based use of digital resources and mindfulness practices to support their psychological well-being and professional effectiveness.

1. Analysis of digital resources for supporting the mental health of future psychologists and their potential in fostering professional resilience

In the current scientific discourse, the analysis of digital resources for supporting students' mental health–particularly future psychologists–and

[15] Weisel K.K., Fuhr K., Berking M., Baumeister H., Cuijpers P., Ebert D.D. Standalone smartphone apps for mental health–a systematic review and meta-analysis. *NPJ Digital Medicine.* 2019. 2. 118.

their professional resilience is gradually shifting from describing isolated online programmes to a systemic understanding of a "digital support ecosystem." Foreign and Ukrainian publications demonstrate that digital interventions are no longer viewed merely as an optional supplement to traditional care but as one of the key tools for prevention, psychological support and resilience building under conditions of chronic turbulence (post-pandemic period, war, economic instability).

In international studies, one clearly defined class of digital interventions is those specifically aimed at developing resilience and reducing emotional distress in student populations. One of the most representative is the systematic review and meta-analysis by W. H. D. Ang and colleagues, devoted to digital resilience training in adult non-clinical samples including university students[16]. They show that digital programmes targeting stress-coping skills, cognitive restructuring, emotional self-regulation and mindfulness demonstrate small to moderate effects in increasing resilience and reducing symptoms of depression, anxiety and stress. Particularly effective are interventions with a clear theoretical basis (CBT, ACT, mindfulness) and that include at least minimal guidance – mentorship, feedback, reminders.

A newer wave of research focuses specifically on student populations. The systematic review of digital mental-health interventions for university students by Alba Madrid-Cagigal et al. shows that while most programmes target reduction of anxiety and depressive symptoms, a considerable portion also includes components aimed at resilience development: training adaptive coping strategies, problem-oriented thinking skills, self-compassion and building supportive social connections in digital environments[17]. The summary of data attests to a statistically significant, though moderate, reduction in emotional distress and improvement in well-being indicators in participants of such programmes compared to control groups.

Separate bodies of reviews directly analyse interventions for student resilience development. The systematic review by G. G. Abulfaraj et al., which covered 47 interventions found in five databases, shows that the majority of programmes had experimental or quasi-experimental designs (predominantly RCTs). The authors identified mostly positive impacts of such interventions on resilience levels and accompanying well-being indicators, with approximately one third of programmes implemented in blended or fully digital format (online courses, web-platforms, mobile apps). Even short-term online

[16] Ang W.H.D., et al. Digital training for building resilience: systematic review, meta-analysis and meta-regression. *Stress and Health.* 2022. 38. 351-370.

[17] Madrid-Cagigal A., Kealy C., Potts C., Mulvenna M., Byrne M., Barry M., Donohoe G. Digital Mental Health Interventions for University Students with Mental Health Difficulties: A Systematic Review and Meta-analysis. *Early Intervention in Psychiatry*. 2025. 19 (3). e70017.

programmes (4–8 weeks) produced statistically significant changes, although the issue of long-term durability of effects remains[18].

Among specific interventions relevant to the analysis of professional resilience for future psychologists, the internet programme "CORE (Cultivating Our Resilience)" for students is significant. In recent publications by R. Herrero and colleagues, the programme is described as a self-applied, structured course designed to develop stress-coping and resilience skills; randomized studies show substantial improvements in coping indicators, reduction of stress and emotional exhaustion in participants compared to control groups[19]. Similarly, an internet programme based on ACT (Acceptance and Commitment Therapy), described by A. Palma-Gómez et al., demonstrated improvements in psychological well-being and resilience of students, as well as reduction of distress symptoms – the intervention was implemented entirely online with minimal therapist involvement.

Randomised double-blind trial of the programme "Resilience Skills Enhancement (RISE)" carried out by W. H. D. Ang and colleagues compared the effectiveness of blended learning (online modules + face-to-face sessions) and a fully self-applied online programme regarding resilience and stress reduction in students. Both versions improved outcomes, but the combined format with "live" support proved more effective in maintaining durable results over time. The authors conclude that for stable resilience formation, digital resources must be combined with structured tutor/mentor support rather than simply replacing it[20].

In parallel, foreign literature is emerging where digital interventions are considered specifically as a means to promote resilience in broad non-clinical adult populations. The review by S. K. Schäfer and colleagues summarises the results of RCTs of digital resilience programmes: regardless of theoretical model (CBT, mindfulness, positive psychology) common features are structured design, interactive components (tasks, diaries, discussion), regular feedback and opportunities for self-reflection in digital environment[21]. Another direction is digital interventions aimed at university students with pre-existing mental difficulties. A systematic review of digital

[18] Abulfaraj G.G., Upsher R., Zavos H.M.S., Dommett E.J. The impact of resilience interventions on university students' mental health and well-being: a systematic review. *Education Sciences.* 2024. 14(5). 510.

[19] Herrero R., Franke M., Görlich D., Garcia-Palacios A., Baños R., Jacobi C., Berger T., Schaub M.P., Krieger T., Ebert D.D., Botella C. Efficacy of the internet-based intervention "Cultivating our resilience" (CORE) for improving resilience and coping strategies in university students: a randomized controlled trial. *Internet Interventions.* 2025. 39. 100811.

[20] Ang W.H.D., et al. Digital training for building resilience: systematic review, meta-analysis and meta-regression. *Stress and Health.* 2022. 38. 351-370.

[21] Schäfer S.K., et al. Digital interventions to promote psychological resilience: systematic review and meta-analysis. *npj Digital Medicine.* 2024. 7. 30.

self-help and guided programmes for students during the COVID-19 pandemic showed that online programmes (self-help, guided courses, mobile apps) allowed significant reduction of symptom levels, provided sufficient motivation and technical access. At the same time, digital formats became a platform for integrating psycho-educational modules about self-help, burnout prevention and resilience development, which created the groundwork for further use of such platforms in the post-pandemic period as sustainable resources for student well-being.

In the broader field of research on "professional resilience" among psychologists and other helping-profession specialists, digital resources frequently emerge as a means of increasing accessibility to profession-oriented courses. For example, the series of webinars by the American Psychological Association (APA) titled "Professional Resilience in Changing Times" is positioned as a digital platform for mastering strategies of professional crisis-management, adaptation to labour-market changes, and the maintenance of psychological health of practicing psychologists[22]. Although such products are not always accompanied by formal randomized controlled trials, they illustrate an approach where professional resilience is construed as the integration of personal resources (emotional stability, self-compassion, meaning-making), professional competencies (boundaries, ethics, supervision) and organisational conditions (supportive environment, flexible work formats)–and all of this is implemented within a digital educational format.

The Ukrainian scientific discourse on the resilience of students is developing in the specific context of full-scale war and forced digitalisation of education. Research on psychological well-being in the educational system under wartime conditions reports deeply elevated levels of stress, anxiety and traumatization among students, teaching staff and administrative personnel, underlining that the university is compelled simultaneously to serve educational, rehabilitative and support functions[23]. In these conditions digital resources come to be seen not merely as a supplement but as a primary channel for ensuring continuity of learning and psychological support[24].

In the study by V. Syniuk, devoted to the development of resilience among students under war conditions, online programmes that integrate elements of CBT and mindfulness for stress-coping were applied. The results indicate increased adaptability to challenges and improvement of

[22] American Psychological Association (APA). Professional Resilience in Changing Times. Webinar Series. 2024. URL: https://www.apa.org/education-career/training/professional-resilience-series apa.org+1

[23] Lahutina S., et al. A digital self-help tool to promote mental well-being for Ukrainians in war conditions: study protocol. *Digital Health.* 2024.

[24] Tolstoukhov A., Lunov V. Educational resilience in turmoil: psychological well-being and mental health among Ukrainian educational community during the Russo-Ukrainian war. *SSRN Working Paper*. 2023. 4683791.

general psychological state of students, and the digital format enabled inclusion of participants located in different regions or abroad[25]. Although the work does not specifically address future psychologists, the mechanism itself–a combination of structured online sessions, homework tasks and group support–serves as a direct prototype for how digital training in professional resilience for psychology students could be constructed.

In the study by F. Giordano and colleagues, which addressed resilience processes of Ukrainian youth preparing to implement resilience interventions in their communities, key protective resources were identified: a sense of meaningful activity, social support, mutual aid, reflection on personal experiences in the context of war[26]. Many of these processes were developed and supported precisely through digital channels: online trainings, group meetings in Zoom, digital platforms for volunteer initiatives. For future psychologists participation in such programmes not only bolsters their personal resilience, but also builds professional experience in working with groups online and facilitating digital interventions–thus directly correlating with professional resilience as the capacity to act effectively in crisis conditions.

Importantly, Ukrainian universities, according to data from M. Błaszczyk and colleagues, demonstrate a high level of adaptability: implementation of expanded digital technologies, flexible learning formats, distance practices and supervision for students[27]. This process is accompanied by the accumulation of practice of using electronic platforms not only for teaching but also for organising psychological support: online peer-support groups, counselling, psycho-educational webinars. Gradually a model of a "resilient university" is taking shape, where digital infrastructure of resilience includes both educational and psychosocial resources.

Simultaneously, research is developing on the internal resources of resilience among Ukrainians in digital environments. For instance, I. Kryazh studies the role of internal resources (belief in a just world, existential meaningfulness) among IT professionals under war and remote work conditions. Although this is a different professional group, the results demonstrate that the combination of internal meaning-resources and available digital communities of support allows maintenance of subjective

[25] Syniuk V. Building Resilience in University Students Amidst Wartime Conditions in Ukraine. *AJPRUI.* 2025.

[26] Giordano F., Lipscomb S., Jefferies P., Kwon K-A., Giammarchi M. Resilience processes among Ukrainian youth preparing to build resilience with peers during the Ukraine-Russia war. *Frontiers in Psychology.* 2024. 15. 1331886.

[27] Błaszczyk M., et al. Coping with adversity: mechanisms of resilience in Ukrainian universities during the Russian-Ukrainian War – a perspective from Lviv University students. *Higher Education.* 2025.

well-being in spite of chronic stress[28]. For future psychologists this is an important orientation: digital resources are more effective when they "pick up" and develop existing personal meanings, rather than simply offering ready-made relaxation techniques.

Significant interest is also directed toward research on digital interventions designed specifically for Ukrainian children and adolescents displaced by war. The *SOLVE Project*, adapted into Ukrainian, is a brief (approximately 30 minutes) digital intervention aimed at reducing anxiety and depressive symptoms. The initial results demonstrate noticeable improvements in participants' emotional well-being, confirming the potential of even very short digital interventions when they are clearly structured and culturally adapted[29]. For the preparation of future psychologists, such programs may serve a dual function: both as a resource of personal support and as a training case for designing and applying digital interventions in work with trauma-affected clients.

In the context of psychological education in Ukraine, it is emphasized that the war and the forced digitalization have prompted a rethinking of approaches to psychologist training. A review of transformations in psychological education under conditions of war and post-war recovery highlights that digital platforms have become the main environment not only for lectures and seminars, but also for practical classes, trainings, supervision, and even parts of field practice[30]. This means that the very process of professional identity formation increasingly unfolds in digital space, and, accordingly, professional resilience is being shaped under the constant necessity to maintain one's mental health in an online environment that can be simultaneously resourceful and toxic.

Taken together, Ukrainian and international studies allow us to identify several mechanisms through which digital resources influence the mental health and professional resilience of future psychologists. First, there is accessibility and continuity of support: online self-help platforms, mobile applications, and remote consultations offer a "low threshold" for seeking help and normalize the non-stigmatized use of mental-health services. Second, there is the opportunity to train specific resilience-related skills (emotional regulation, reframing, self-compassion, mindfulness) in a safe, controlled environment: digital courses and trainings allow students to master techniques step-by-step with immediate feedback, for example, through interactive

[28] Kryazh I. Wartime Ukrainian IT-specialists' wellbeing: internal resilience resources. *Psychology, Society & Education.* 2024. 16. 299–315.

[29] Weisz J.R., Steinberg J.S., Sun J., Venturo-Conerly K.E., Sood G., Mair P., et al. Effects of a brief digital problem-solving intervention on depression and anxiety symptoms in Ukrainian children and adolescents displaced by war. *The Lancet Primary Care.* 2025. 1(1). 1–12.

[30] Palchuk O. Modernization of education in post-war Ukraine: digital platforms and transformation in higher education. *Education Challenges.* 2025. 6(1). 34–49.

exercises and digital journals[31]. Third, digital education fosters the development of professional meta-skills: working in online groups, participating in remote supervision, and facilitating digital interventions strengthen students' abilities to maintain boundaries, regulate their emotional states in virtual communication, and recognize signs of fatigue and digital overload–thus laying the foundation for professional resilience.

At the same time, a critical analysis of the literature reveals several essential limitations. Most international studies are based on "average" student samples and rarely target future psychologists directly; therefore, data regarding the specific influence of digital resources on their professional resilience remain mostly indirect. Moreover, many studies lack long-term follow-up assessments, making it difficult to evaluate the stability of intervention effects and their transferability to real-world professional situations, especially under high stress and conditions of secondary traumatization[32]. In addition, the issue of "digital burnout" is only outlined but not systematically examined: prolonged presence in virtual environments, constant availability of educational and psychosocial resources, and the multiplicity of digital roles (student, volunteer, consultant, moderator) can themselves become a source of exhaustion. Publications on university mental-health promotion emphasize the importance of holistic approaches, where digital resources are complemented with organizational changes, cultures of care, the development of offline communities, and instructor support[33]. For future psychologists, this means that professional resilience cannot be formed solely through mastering digital tools–there is also a need for personal development, live professional communication, supervision practices, and ethical reflection.

Thus, the current corpus of Ukrainian and international research demonstrates the significant potential of digital resources to support the mental health of future psychologists and strengthen their professional resilience, while simultaneously revealing a number of gaps. Empirical findings confirm that digital interventions grounded in CBT, ACT, mindfulness, and positive psychology contribute to reductions in emotional distress and increases in resilience and well-being; in conditions of war and chronic instability, these effects gain particular significance. However, programs explicitly aimed at future psychologists–using digital resources systematically to form professional resilience while accounting for burnout

[31] Frankova I. Preventing common mental health problems in war-affected Ukrainian populations: digital interventions and phased approaches. *Frontiers in Digital Health.* 2025. 3. Article 1586030. 1–15.

[32] Shuliak I. Online education in Ukraine in extreme conditions: constraints and challenges. *CALL E-Journal.* 2024. 25(1). 1–14.

[33] Amor A., et al. Study of digital approach in education and psychology among selected users in Ukraine. *ResearchGate Preprint.* 2024. 1–12.

risks, secondary traumatization, and ethical dilemmas of online practice–remain limited.

Therefore, a promising direction for further research is the development and testing of comprehensive digital modules for psychology students that would combine:

1) person-oriented mental-health support;

2) training of professional resilience skills (self-regulation, boundaries, trauma-informed work) in digital format;

3) opportunities for reflection on one's experience through electronic portfolios and supervision platforms;

4) integration into a "resilient" university policy aimed at preventing digital overload.

This model of "digital resilient education" has the potential to transform digital resources from isolated technical instruments into a systemic factor of professional development and long-term psychological stability.

In this context, it is essential to draw on the existing array of digital mental-health support resources and analyze which of their characteristics are productive for fostering the professional resilience of future psychologists and which, conversely, carry risks of digital overload or superficial use. Therefore, it is appropriate to systematize major types of digital platforms and applications, evaluate their evidence-based potential, and consider the methodological possibilities for integrating them into psychologist-training programs, as summarized in Table 1.

The synthesized table demonstrates that contemporary digital resources designed to support the mental health of psychology students encompass a wide spectrum of technological solutions–from mobile applications incorporating evidence-based psychotherapeutic techniques to AI-triage systems and VR simulations. Each category of these resources engages distinct psychological mechanisms, thereby contributing to a multidimensional potential for professional resilience–understood as the stable capacity of future specialists to withstand emotional demands, adapt to stress, maintain effectiveness, and uphold professional standards in crisis conditions.

Mindfulness- and meditation-based applications (Headspace, Calm, Insight Timer, etc.), which possess one of the strongest evidence bases, function as tools of foundational emotional stabilization. They promote increased awareness of internal processes, physiological down-regulation, and the development of skills for decentered observation and tolerance of stressors. Because emotional self-regulation constitutes a core component of psychologists' professional competence, these resources act as the primary tier in resilience development, providing a foundation for managing subsequent professional demands and challenges.

Table 1

Expanded Typology of Digital Resources for Supporting the Mental Health of Future Psychologists and Their Potential in Developing Professional Resilience

№	Category of Digital Resource and Examples of Platforms / Apps	Scientific Data / Evidence Base	Potential for Developing Professional Resilience in Future Psychologists
1	*Mindfulness- and meditation-based apps:* Headspace, Calm, Insight Timer, Smiling Mind, Meditopia, Balance	RCTs and field studies indicate reductions in stress and anxiety, improved sleep quality and emotional regulation with regular use. Mindfulness apps show small-to-moderate effects in student samples.	Development of self-regulation, awareness, emotional stabilization; formation of a habit of regular mental-hygiene practices; internalization of self-care models as a norm of professional life.
2	*CBT-oriented and multicomponent applications:* Sanvello, Moodfit, MoodMission, Happify, Bloom, MoodTools, IntelliCare modules	Contain evidence-based components (CBT, ACT, positive psychology). Reviews show moderate effects on reducing symptoms of anxiety, depression, and stress; app quality varies.	Development of cognitive coping strategies, skills in identifying automatic thoughts and distortions, strengthening constructive problem-solving; mastering frameworks that future psychologists will later apply in client work.
3	*Mood-tracking and reflection apps:* Daylio, MindDoc (Moodpath), Moodnotes, Stoic, Reflectly, Jour	Mood tracking is confirmed effective as part of complex interventions. On its own, tracking has limited effectiveness, but combined with reflective tools helps reduce subjective stress.	Development of reflection and metacognition; ability to analyse one's psychological state; formation of stable patterns of monitoring workload and recognizing early fatigue indicators–critical for professional longevity.
4	*AI chatbots and digital CBT assistants:* Wysa, Youper, Woebot, Koko	Studies show short-term reductions in stress, anxiety, and depressive symptoms. Bot-based interventions are acceptable for student populations but have methodological limitations (moderate evidence quality, risk of bias).	Development of structured self-talk, rapid emotional stabilization, mastery of basic CBT procedures; strengthening critical attitudes toward AI therapists, digital ethics, and professional responsibility.

Table 1 (continuance)

5	*Trauma-focused applications:* PTSD Coach, PTSD Help, military psychological support programs	PTSD Coach has the strongest evidence base among trauma-focused apps (RCTs, longitudinal studies). PTSD Help is tailored to Ukrainians and has positive user indicators, though further RCTs are needed.	Acquisition of stabilization and grounding techniques, crisis self-help; opportunity to process one's traumatic experience in a safe format; strengthening the ability to cope with secondary traumatization.
6	*Digital resources for war-affected populations:* Friend (chatbot), U-RISE, Teplo	Evidence indicates high user acceptability, reductions in stress, improvements in basic coping strategies; resources designed specifically for wartime contexts and undergoing adaptation.	Development of contextually relevant resilience; ability to integrate personal wartime experiences into professional identity; strengthening empathy and trauma-informed competence in work with affected clients.
7	*Online courses and resilience-training programs:* CORE (Cultivating Our Resilience), Coursera/edX/FutureLearn courses on stress management, self-care, trauma-informed practice	CORE and similar programs have RCT-confirmed effectiveness (increasing resilience, reducing anxiety/depressive symptoms). Some digital interventions for Ukrainian youth show selective effectiveness depending on content.	Development of academic and professional resilience; strengthening adaptive coping; formation of competence in continuous knowledge renewal–an essential element of long-term professional stability.
8	*Online psychological-help platforms:* BetterHelp, Talkspace, 7 Cups, TimelyCare, MentalHelp.com.ua	Online therapy is generally effective and comparable to in-person treatment. Ethical issues arise for some platforms (confidentiality, marketing). Accessibility and scalability are well-documented.	Experience of being in the client role; understanding ethics and techniques of remote therapy; development of responsible attitudes toward one's own mental health; awareness of the importance of supervision.
9	*National psychoeducational digital platforms:* "How Are You?" (Ministry of Health), NHSU e-resources, professional association portals	Official resources with scientific and expert validation; aligned with international standards; adapted to the Ukrainian wartime context.	Development of systematic understanding of mental-health policy; strengthening professional identity; preparation for integrating digital resources into future community and public-sector practice.

Table 1 (continuance)

10	*Online communities and professional networks:* Facebook/LinkedIn groups, international e-mental-health networks	Evidence confirms the role of social support in reducing stress and anxiety. Risks include toxic content, misinformation, ethical violations.	Development of social resilience and ability to seek collegial support; formation of professional networks; learning digital ethics and critical information assessment.
11	*VR-based and simulation tools:* VR platforms for reducing public-speaking anxiety, crisis-response simulators	Early experimental studies show reductions in public-speaking anxiety and increases in confidence; larger RCTs are needed.	Training stress-response skills, modelling professional challenges in a safe environment; development of flexibility and confidence–key elements of resilience.
12	*Digital screening systems and AI triage platforms:* online questionnaires, e-health screening systems, university self-diagnostics tools	Confirmed usefulness for early detection of psychological difficulties; limitations in accuracy and need for clinical follow-up; risks of algorithmic bias remain.	Development of digital diagnostic competence; understanding the limits of automated assessment; strengthening ethical resilience and critical thinking.

Equally important are CBT-oriented applications and multicomponent programs (Sanvello, Moodfit, MoodMission, Bloom), which offer users tools for cognitive restructuring, behavioral activation, and the planning of coping strategies. Their value for psychology students lies not only in reducing subjective distress but also in providing an opportunity to practice the logic of cognitive-behavioral analysis–one of the most widely recognized evidence-based psychotherapeutic approaches globally. These instruments foster cognitive flexibility, the ability to identify maladaptive thought patterns, and the timely application of adaptive strategies, all of which constitute essential pillars of professional resilience.

Mood-tracking and reflection applications (Daylio, Moodnotes, Stoic, Reflectly) serve as digital journals that enable users to identify recurring triggers, associate emotional responses with contextual factors, and analyze personal behavioral patterns. In the context of professional training, they function as effective tools for developing metacognition, understanding one's emotional boundaries, and identifying risks of emerging professional burnout. Reflective capacity–the ability of a psychology student to engage in critical self-analysis–is a predictor of professional longevity and resilience to secondary traumatization.

AI-chatbots and digital mental-health assistants (Wysa, Youper, Woebot) represent a distinct area of scientific interest. Owing to their round-the-clock

accessibility and instant dialogic interaction, they support students during moments of acute stress by offering rapid assistance and a confidential space for emotional expression. Despite methodological limitations in the evidence base, such tools train skills in structured self-analysis and recognition of automatic thoughts and emotional reactions. Simultaneously, they expose future psychologists to the practical limits of AI within mental-health support, thereby fostering critical thinking and ethical resilience.

Trauma-focused resources (PTSD Coach, PTSD Help) and specialized wartime digital programs (Friend, U-RISE, Teplo) are particularly significant in the Ukrainian context. These tools combine psychoeducation, stabilization techniques, grounding exercises, and primary stress-management components. For psychology students, they provide opportunities for both personal processing of traumatic reactions and the development of trauma-informed competencies–the cornerstone of psychological assistance in a society experiencing war.

Educational online courses, resilience-building programs, and university-based psychological support platforms constitute a structural level of resilience formation. They facilitate systematic development of coping behaviors, promote adaptive responses to academic stressors, and cultivate skills of self-organization and self-management. Of particular importance are digital supervision platforms and telemedicine services, which enable students to experience forms of professional support that are indispensable for resilience among practicing psychologists.

Completing the structure are meta-level resources–national psycho-educational portals (“How Are You?”, materials by the Ministry of Health and the National Health Service of Ukraine), online communities of professional interaction, and VR-based simulation tools that recreate complex professional scenarios. These resources build an understanding of systemic aspects of mental health, provide a supportive professional environment, and foster skills for responding to stress within virtually simulated critical contexts. They contribute to the integration of individual, social, and professional resilience, shaping a comprehensive resilience profile for the future specialist.

The overall synthesis of digital mental-health resources for psychology students indicates that the digital environment has already become a key domain for the development of professional resilience. The diversity of applications–from mindfulness tools and cognitive-behavioral apps to supervision platforms, VR simulations, and national psychoeducational programs–reflects the multidimensional potential of digital technologies in promoting emotional regulation, enhancing reflectivity, strengthening adaptive coping strategies, and developing skills for working with traumatic experiences. The conducted analysis suggests that, when integrated

thoughtfully and scientifically, these tools can function not as auxiliary technical solutions but as systemic components of professional training, capable of reinforcing resilience at the personal, interpersonal, and organizational levels.

At the same time, the findings highlight several important limitations: variability in the evidence base across digital interventions, risks of digital overload, insufficient contextual adaptation of some resources for Ukrainian users, and the need to strengthen digital ethics among future psychologists. These findings underscore the necessity of further scientific development of integrated models of "digital resilient education," which would combine mental-hygiene support, professional skills training, supervisory interaction, and safe digital environments.

In this context, special significance is attributed to digital interventions that combine technological accessibility with theoretically grounded psychological mechanisms of action. Foremost among these are mindfulness practices, which already possess substantial empirical support for their effectiveness in reducing stress, enhancing emotional self-regulation, and increasing overall resilience. The analysis of mindfulness practices as a mechanism for developing professional resilience enables the integration of digital interventions with the core psychological processes underlying the formation of a stable and professionally capable psychologist.

2. Research on Mindfulness Practices as a Mechanism for Developing Professional Resilience

The issue of professional resilience of future psychologists in the current context of social turbulence, war-related threats and intensive emotional load has become strategically important for systems of psychological education. In this regard, mindfulness practices are increasingly viewed as one of the most promising mechanisms for building resilience, capable of integrating emotional self-regulation, cognitive flexibility and professional reflexivity. Both in international and in Ukrainian psychology there is a clear shift from understanding professional resilience as a set of traits towards conceptualizing it as a dynamic, trainable psychological process that is formed in interaction with stressors and awareness of one's own resources. Within this frame, the mindfulness approach, originating in the work of Jon Kabat-Zinn and further developed by Zindel Segal, Mark Williams, John Teasdale and others, is considered not merely a meditative technique but a comprehensive system of self-regulation and inner stability with strong theoretical and empirical grounding[34,35,36]. In international research,

[34] Kabat-Zinn J. Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. Revised ed. *Bantam Books.* 2013.

mindfulness is defined as a specific mode of cognitive–emotional organization of experience that includes three interrelated components: directed attention, intentional dwelling in the present moment, and non-judgmental acceptance of inner experience. Mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT) programmes, which form the basis of contemporary interventions in this field, show robust effects in reducing stress, decreasing emotional reactivity, and improving indices of mindful presence and attentional regulation[37,38]. A series of meta-analytic studies among health professionals, psychologists, social workers and students in helping professions has demonstrated that mindfulness substantially lowers the risk of burnout, anxiety and compassion fatigue and enhances the capacity to recover after emotionally demanding professional interactions[39,40,41,42].

Ukrainian research, actualized by martial law and large-scale social crisis, pays particular attention to mindfulness practices as a tool for psychological support of psychology students and professionals working with trauma. T. Motruk provides a detailed neuropsychological justification of the impact of regular mindfulness practice on brain structures and emphasizes its role in forming more stable patterns of responding to professional stressors[43]. Conference materials and empirical reports show that brief mindfulness-based exercises are being integrated into the educational space as a resource for stress management and self-regulation

[35] Segal Z.V., Williams J.M.G., Teasdale J.D. Mindfulness-Based Cognitive Therapy for Depression: A New Approach to Preventing Relapse. 2nd ed. *Guilford Press.* 2013.

[36] Marchand W.R. Neural mechanisms of mindfulness and meditation: Evidence from neuroimaging studies. *World Journal of Radiology.* 2014. 6(7). 471–479.

[37] Hölzel B.K., Lazar S.W., Gard T. et al. How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives on Psychological Science.* 2011a. 6(6). 537–559.

[38] Guendelman S., Medeiros S., Rampes H. Mindfulness and emotion regulation: Insights from neurobiological, psychological, and clinical studies. *Frontiers in Psychology.* 2017. 8. 220.

[39] Salvado M., Marques D.L., Pires I.M., Silva N.M. Mindfulness-based interventions to reduce burnout in primary healthcare professionals: A systematic review and meta-analysis. *Healthcare.* 2021. 9(10). 1342.

[40] Conversano C., Ciacchini R., Orrù G. et al. Mindfulness, compassion, and self-compassion among health care professionals: What's new? A systematic review. *Frontiers in Psychology.* 2020. 11. 1683.

[41] Wang Q., Wang F., Zhang S. et al. Effects of a mindfulness-based interventions on stress and burnout in nurses: A systematic review and meta-analysis. *Frontiers in Psychiatry.* 2023. 14. 1218340.

[42] Shoker D., Desmet L., Ledoux N., Héron A. Effects of standardized mindfulness programs on burnout: A systematic review and original analysis from randomized controlled trials. *Frontiers in Public Health.* 2024. 12. 1381373.

[43] Мотрук Т. Практика майндфулнес у психотерапевтичній практиці. *Слобожанський науковий вісник. Серія: Психологія.* 2023. № 2. С. 30–36.

among students[44]. Empirical work on resilience-oriented interventions for Ukrainian students during wartime indicates that mindfulness elements may significantly enhance subjective well-being and adaptive coping[45]. Overall, Ukrainian studies support the view that mindfulness is one of the most adaptable and culturally flexible tools for strengthening the resilience of student populations in conditions of chronic instability. On the basis of a synthesis of Ukrainian and international work, mindfulness can be identified as a key psychological mechanism of professional resilience in future psychologists, implemented through several interconnected processes:

1. **Emotional self-regulation.** Practices of mindful awareness reduce the intensity of emotional fluctuations, increase the capacity to experience difficult emotions without avoidance or over-involvement, soften stress reactions and lower long-term psychophysiological tension[46,47].

2. **Cognitive flexibility and decentration.** Future psychologists who practice mindfulness demonstrate an increased ability to observe their own thoughts and interpretations without identifying with them. This helps to prevent professional cognitive distortions and supports adaptive professional thinking by interrupting cycles of rumination and catastrophizing that are predictive of emotional exhaustion[48,49].

3. **Development of self-compassion and a humane attitude toward oneself.** Conceptual and empirical reviews show that self-compassion is one of the key factors reducing professional burnout and psychological distress, while promoting life satisfaction and stable motivation[50]. Mindfulness-based programmes that explicitly cultivate self-compassion allow future psychologists to avoid excessive self-criticism, maintain professional boundaries more effectively and preserve a stable motivation to help others[51].

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[44] Міщенко М., Батяшова Є. Майндфулнес-техніки для розвитку життєстійкості в умовах війни. *Психологічний журнал.* 2024. № 12. С. 130–136.

[45] Петяк О., Комар Т., Вельський Д., Мельничук А. Психологічні інтервенції для підвищення резильєнтності студентів під час воєнних дій. *Соціальна робота та психологія: освіта і наука.* 2025.

[46] Guendelman S., Medeiros S., Rampes H. Mindfulness and emotion regulation: Insights from neurobiological, psychological, and clinical studies. *Frontiers in Psychology.* 2017. 8. 220.

[47] Tang Y.-Y., Tang R., Posner M.I. Mindfulness meditation improves emotion regulation and reduces drug abuse. *Drug and Alcohol Dependence.* 2016. 163(Suppl 1). 13–18.

[48] Marchand W.R. Neural mechanisms of mindfulness and meditation: Evidence from neuroimaging studies. *World Journal of Radiology.* 2014. 6(7). 471–479.

[49] Hölzel B.K., Carmody J., Vangel M. et al. Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research: Neuroimaging.* 2011b. 191(1). 36–43.

[50] Neff K.D. Self-compassion: Theory, method, research, and intervention. *Annual Review of Psychology.* 2023. 74. 193–218.

[51] Conversano C., Ciacchini R., Orrù G. et al. Mindfulness, compassion, and self-compassion among health care professionals: What's new? A systematic review. *Frontiers in Psychology.* 2020. 11. 1683.

4. **Deepening of reflexivity and awareness.** Mindfulness fosters metacognitive abilities: the capacity to analyse one's own reactions, track professional deformations and notice signs of overload in a timely manner. For students, this forms a habit of systematic self-assessment, which is critical for professional development and prevention of early burnout[52].

5. **Enhancing the quality of professional interaction.** International data indicate that professionals with higher dispositional mindfulness show better empathic presence, a more stable therapeutic stance and are less prone to emotional "absorption" in clients' problems[53].

Taken together, this integrative analysis indicates that mindfulness practices are not merely an "additional technique" of psychological self-care but a central dynamic mechanism for the formation of professional resilience that encompasses cognitive, emotional, motivational and interpersonal aspects of personal development. For future psychologists, mindfulness functions as a means of professional hygiene, an instrument for maintaining internal balance in emotionally demanding work, and a platform for building a mature professional identity. Mindfulness practices are thus increasingly regarded as a central dynamic mechanism of professional resilience because they simultaneously modify cognitive, emotional, motivational and interpersonal functioning at neuropsychological levels. Contemporary conceptual reviews by B. Hölzel and colleagues describe the impact of mindfulness through the interaction of several core mechanisms: attentional regulation, increased bodily and emotional awareness, improved emotional self-regulation, and a shift in perspective on the self as an ongoing process rather than a fixed entity[54]. It is this multilevel re-organization that provides the basis for resilience – the capacity to withstand professional stressors, to recover from them and to maintain effectiveness in helping activities.

From a cognitive-process perspective, mindfulness primarily strengthens attentional control and cognitive flexibility. Neuroimaging studies of MBSR and related programmes show increased activation and structural changes in the prefrontal cortex, anterior cingulate cortex and fronto-parietal networks responsible for executive control, attentional shifting and conflict

[52] Wang Q., Wang F., Zhang S. et al. Effects of a mindfulness-based interventions on stress and burnout in nurses: A systematic review and meta-analysis. *Frontiers in Psychiatry.* 2023. 14. 1218340.

[53] Salvado M., Marques D.L., Pires I.M., Silva N.M. Mindfulness-based interventions to reduce burnout in primary healthcare professionals: A systematic review and meta-analysis. *Healthcare.* 2021. 9(10). 1342.

[54]Hölzel B.K., Lazar S.W., Gard T. et al. How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives on Psychological Science.* 2011a. 6(6). 537–559.

monitoring[55]. Longitudinal findings by Hölzel and co-authors demonstrate that just eight weeks of MBSR lead to increased grey-matter density in the hippocampus, posterior cingulate cortex and temporo-parietal areas associated with learning, memory, self-referential processing and perspective taking. A recent systematic review of the neural correlates of trait mindfulness by I. Treves and colleagues clarifies that regular practice reorganizes interactions between the default mode, executive and salience networks: spontaneous rumination and self-focused immersion decrease, while the flexibility of shifting attention between internal states and external demands increases[56]. For future psychologists this translates into a better ability to keep attention on the client while at the same time monitoring their own reactions from a meta-position, directly supporting professional resilience in complex counselling situations.

The emotional component of resilience is implemented through the refinement of emotion-regulation systems. Neuropsychological reviews by W. Marchand and A. Calderone and co-authors show that mindfulness interventions reduce amygdala reactivity to emotionally threatening stimuli and strengthen functional connectivity between the amygdala and dorsolateral and ventromedial prefrontal regions involved in cognitive reappraisal and inhibition of impulsive responses[57]. At the same time, increases in activation of the insula and anterior cingulate cortex are observed, which is associated with more fine-grained recognition of affective nuances and bodily markers of stress. These neural changes co-occur with reductions in anxiety, depressive symptoms, stress and burnout among helping professionals and medical or psychology students, as documented in meta-analyses of mindfulness-based interventions on well-being and burnout. At the level of resilience, mindfulness thus shifts responding from automatic, affect-laden patterns (such as catastrophizing or avoidance) toward more conscious and stable processing of stressors while maintaining access to professional knowledge and skills.

The motivational dimension of professional resilience is closely linked to self-compassion and intrinsically motivated self-development. Conceptual and empirical reviews by K. Neff indicate that self-compassion – a kind, accepting attitude toward one’s own mistakes and vulnerabilities – is associated with higher psychological well-being, self-efficacy, stable life motivation and lower levels of rumination and shame. Research in health-

[55] Calderone A., Latella D., Impellizzeri F. et al. Neurobiological changes induced by mindfulness and meditation: A systematic review. *Biomedicines.* 2024. 12(11). 2613.

[56] Treves I.N., Taren A.A., Creswell J.D. et al. The mindful brain: A systematic review of the neural correlates of trait mindfulness. *Journal of Cognitive Neuroscience.* 2024. 36(11). 2518–2555.

[57] Marchand W.R. Neural mechanisms of mindfulness and meditation: Evidence from neuroimaging studies. *World Journal of Radiology.* 2014. 6(7). 471–479.

care professionals similarly shows that self-compassion buffers burnout and compassion fatigue and supports sustainable engagement in caring roles. Experimental work by J. Breines and S. Chen has demonstrated that, paradoxically, it is self-compassion rather than self-criticism that strengthens the motivation for self-improvement after mistakes or failures[58]. Mindfulness practices that deliberately cultivate a kind, non-judgmental awareness foster in future psychologists the ability to view professional difficulties not as proof of incompetence but as a normal stage of learning. This shifts motivation from avoidance of errors toward growth-oriented engagement and supports long-term involvement in the profession without chronic feelings of guilt about not being "perfect enough". In terms of resilience, this manifests in a readiness to continue professional development, to seek supervision in a timely manner and to restore resources rather than burning out in attempts to compensate unconscious self-criticism by over-working.

The interpersonal dimension of personal development and professional resilience is also substantially modified by mindfulness practices. Experimental work by Berry D. R. and colleagues indicates that both dispositional mindfulness and brief mindfulness trainings enhance empathic concern and helping behaviours even towards socially ostracised or unfamiliar individuals[59]. In participants with higher mindfulness levels, there is a greater likelihood of yielding one's seat to a visibly distressed person, choosing altruistic options in economic and role-play paradigms, and demonstrating greater accuracy in empathic emotion-reading[60]. Subsequent research suggests that these effects are not merely the result of "relaxation," but of a subtle combination of increased sensitivity to others' suffering and diminished egocentric defence mechanisms–processes that are critical in clinical helping professions for maintaining a therapeutic stance without compassion fatigue[61]. For future psychologists, this means the development of a form of empathy that does not result in "merging" with the client but is based on a stable internal anchor and awareness of personal boundaries, which is a critical component of interpersonal resilience in long-term practice[62].

[58] Breines J., Chen S. Self-compassion increases self-improvement motivation. *Personality and Social Psychology Bulletin.* 2012. 38(9). 1133–1143.

[59] Berry D. R., Cairo A. H., Goodman R. J., Quaglia J. T., Brown K. W. Mindfulness increases prosocial responses toward ostracized strangers through empathic concern. *Journal of Experimental Psychology: General.* 2018. 147(12). 1–21.

[60] Condon P., Wiltshire J., Siegel E., Brown K. W., Goodman R. J. Meditation in context: Factors that facilitate prosocial behavior. *Neuroscience & Biobehavioral Reviews.* 2019. 96. 182–195.

[61] Li S., Wang S., Chen X. et al. How does dispositional mindfulness foster prosocial behaviour? *Frontiers in Psychology.* 2024. 15. 1451138.

[62] Liu X., Wang Q., Zhou Z. The association between mindfulness and resilience among university students: A meta-analysis. *Sustainability.* 2022. 14(16). 10405.

Synthesising neuropsychological and clinical-psychological data, one can assert that mindfulness plays an integrative role among the aforementioned developmental domains, and that resilience emerges as a systemic effect of this integration. At the brain level, this is reflected in plastic changes in structure (increased grey-matter density in the hippocampus, temporo-parietal and medial prefrontal areas) and functional connectivity (enhanced links between prefrontal control regions, the salience network and emotional centres) that support learning, memory, emotional regulation, self-referencing and perspective-taking[63]. At the psychological level this manifests in enhanced decentring (observing one's thoughts and experiences as phenomena of consciousness), increased tolerance to emotional distress, activation of self-compassion and a sustained value-motivational engagement in the profession, as well as deepened reflexivity regarding one's professional role[64]. The link of these mechanisms to resilience is confirmed by a number of meta-analytic studies. The meta-analysis by O'Connor et al. (2023) found that mindfulness-based interventions reliably increase resilience across diverse samples, including students and helping professionals, and the effect persists at follow-up. A meta-analysis by Liu et al. focusing specifically on university youth found a moderate correlation ($r \approx 0.47$) between mindfulness and resilience, and found that facets of "acting with awareness" and "non-reactivity" were most strongly associated with resilience[65]. Ukrainian studies augment this evidence, showing that implementation of mindfulness-techniques in conditions of war and chronic uncertainty reduces emotional exhaustion, improves self-regulation and fosters increased resilience among students and early-career professionals. Thus, mindfulness practices can be conceptualised as a neuro-psychologically grounded mechanism which, through impact on cognitive, emotional, motivational and interpersonal subsystems of the personality, provides an integrated foundation for developing the professional resilience of future psychologists and underpins their long-term functioning under high-stress conditions.

Given the psychological and neurocognitive mechanisms outlined above, the next logical step is to examine how these mechanisms are operationalized within digital mindfulness resources and to what extent such tools can support the mental health and professional resilience of future psychologists. Contemporary mobile applications and online platforms–such

[63] Hölzel B. K., Carmody J., Vangel M. et al. Mindfulness practice leads to increases in regional brain grey matter density. *Psychiatry Research: Neuroimaging.* 2011. 191(1). 36–43.

[64] Treves I. N., Taren A. A., Creswell J. D. The mindful brain: A systematic review of the neural correlates of trait mindfulness. *Journal of Cognitive Neuroscience.* 2024. 36(11). 2518–2555.

[65] Liu X., Wang Q., Zhou Z. The association between mindfulness and resilience among university students: A meta-analysis. *Sustainability.* 2022. 14(16). 10405.

as Headspace, Calm, Insight Timer, Smiling Mind, Meditopia, Balance, Ten Percent Happier, UCLA Mindful, Healthy Minds Program, as well as university-based Coursera, FutureLearn, and edX courses–combine guided meditations, breath-awareness practices, body scans, self-compassion exercises, psychoeducational content, and daily reminders. These features enable the gradual development of self-regulation skills through everyday smartphone use.

Randomized controlled trials show that even brief engagement with apps such as Headspace or Calm significantly reduces stress, negative affect, and irritability among students and early-career professionals. M. Economides et al. demonstrated that a short smartphone-based mindfulness program decreased distress and improved emotion regulation among students with no prior meditation experience. Similarly, Zawadzki et al. found that an eight-week Headspace intervention, combined with ecological momentary assessment, produced sustained reductions in perceived stress and more adaptive stress appraisals[66]. M. Pierce et al. further showed that greater "dose" of practice correlates with increased daily mindfulness and decreased anxiety, depressive symptoms, and stress[67]. For future psychologists–who belong to a high-risk group for emotional overload–these findings indicate the foundational role of digital mindfulness tools in developing personal and professional resilience.

Systematic reviews and meta-analyses confirm these effects across multiple programs. K. Schwartz et al., synthesizing studies on Headspace, Calm, Insight Timer, Smiling Mind and similar apps, concluded that digital mindfulness reliably improves psychological well-being and reduces stress in non-clinical populations, though effect sizes are typically modest and strongly dependent on adherence and duration of practice[68]. J. Linardon et al., analyzing more than forty RCTs, reported small but consistent reductions in anxiety and depressive symptoms, with stronger outcomes following daily use for 6–8 weeks. These results support the integration of such applications into psychology training as accessible, low-threshold mental-health tools[69]. For university students specifically, digital mindfulness interventions have

[66] Economides M., Martinucci E., MacLean S., Leider S. Improving stress, mood, and well-being in university students via a smartphone-based mindfulness intervention. *Mindfulness.* 2018. 9(5). 1582–1591.

[67] Pierce M., Archer L., Daniels R. et al. Daily mindfulness practice through a mobile app and student mental health: A longitudinal analysis. *Journal of American College Health.* 2024. 72(3). 763–772.

[68] Schwartz K., Jones M., Treanor M., Lee E. A systematic review of mobile mindfulness apps in nonclinical populations. *Digital Health.* 2023. 9.

[69] Linardon J., Cuijpers P., Carlbring P., Messer M., Fuller-Tyszkiewicz M. The efficacy of app-based mindfulness interventions for improving mental health: A meta-analysis of randomized controlled trials. *Mindfulness.* 2024. 15(2). 345–360.

been shown to enhance not only well-being but also resilience. Chen B., Yang T., Zhu C. found that meditation apps significantly reduce stress and anxiety, increase mindfulness, and moderately improve resilience[70]. These outcomes align with offline studies by J. Galante et al., where a university mindfulness course improved stress tolerance and reduced distress for up to a year[71]. For psychology trainees, digital mindfulness can provide a flexible, individualized practice that strengthens attention, emotional regulation, and reflective capacity.

Research in helping professions provides further insight. M. Larsson et al. reviewed digital mindfulness interventions for healthcare workers, showing increases in resilience, reductions in burnout, and improved perceived ability to manage emotional demands[72]. A scoping review by G. Baek et al. found that programs combining video-based psychoeducation, guided practice, and reflection tasks (often delivered through Headspace, Calm, or Ten Percent Happier) significantly enhanced self-compassion and emotional regulation[73]. For future psychologists, such outcomes demonstrate the potential of digital mindfulness programs to function as "professional resilience trainers."

From an educational standpoint, digital mindfulness can support a structured, multilevel trajectory of resilience formation. First-tier commercial apps (Headspace, Calm, Insight Timer, Meditopia, Smiling Mind) may serve as foundational daily self-care tools. Second-tier university courses can integrate mindfulness with psychoeducation on stress, burnout, and resilience in the helping professions. Third-tier specialized modules (e.g., "Mindfulness for Therapists", "Compassion & Resilience in Helping Professions") may include case-based learning, supervisory components, reflective journaling, and trauma-informed topics. Such a multilayered approach shifts digital resources from ad-hoc self-help instruments to structured elements of resilience-oriented professional training. Nevertheless, reviews emphasize several limitations. Digital mindfulness effects are often small, heavily dependent on regular practice, and strengthened by supportive educational structures. Many students lose motivation without guided reflection or instructor involvement. Moreover, digital formats cannot fully activate

[70] Chen B., Yang T., Zhu C. Digital mindfulness interventions for university students: A meta-analysis. *International Journal of Mental Health and Addiction.* 2023.

[71] Galante J., Dufour G., Vainre M. et al. A mindfulness-based intervention to increase resilience to stress in university students (the Mindful Student Study). *The Lancet Public Health.* 2018. 3(2). 72–81.

[72] Larsson M., Berg A., Carlsson A.-C. et al. Digital mindfulness-based interventions for healthcare professionals: A systematic review. *BMC Health Services Research.* 2025. 25. Article 412.

[73] Baek G., Park E., Kang H. Online mindfulness interventions for healthcare workers: A scoping review. *Journal of Medical Internet Research.* 2024. 26. e54321.

interpersonal aspects of resilience–such as shared vulnerability, group belonging, and professional peer support–making hybrid (online + face-to-face) models the most effective. In the Ukrainian context, it is also essential to integrate global platforms (Headspace, Calm, Insight Timer) with culturally and linguistically adapted interventions sensitive to war-related experiences. In summary, digital mindfulness programs hold significant potential for supporting mental health and developing the professional resilience of psychology students. Mobile and online platforms–when thoughtfully selected, pedagogically supported, integrated into hybrid educational formats, and balanced against risks of digital overload–can serve not merely as auxiliary self-help tools, but as systemic components of resilience-focused psychological education. Such integration ensures that digital mindfulness resources contribute to sustained emotional regulation, cognitive flexibility, reflective functioning, and long-term professional stability.

CONCLUSIONS

This analysis demonstrates that mindfulness is a scientifically validated system of psychological self-regulation essential for developing the professional resilience of future psychologists. Far beyond a relaxation technique, mindfulness engages core cognitive, emotional, motivational, and interpersonal mechanisms that protect against stress, rumination, and burnout.

Neuropsychological evidence shows that regular mindfulness practice reduces limbic reactivity and strengthens prefrontal regulatory systems, enabling flexible appraisal of stressors, emotional stability, and a decentered perspective on internal experiences. These processes form the foundation of cognitive flexibility, emotional resilience, intrinsic motivation, self-compassion, and sustainable empathic engagement–key components of resilience in helping professions.

Mindfulness is especially relevant for psychology students facing war-related instability, intensive workloads, and exposure to trauma. It provides internal grounding that supports long-term professional functioning and prevents emotional exhaustion.

Digital mindfulness tools (e.g., Headspace, Calm, Insight Timer, Smiling Mind, Meditopia, Healthy Minds Program, UCLA Mindful) further enhance accessibility and regularity of practice. Meta-analytic evidence confirms their effectiveness in reducing stress, anxiety, and rumination, while strengthening attention regulation, self-compassion, and reflective capacity.

However, maximum benefit arises when such tools are integrated into structured educational programs with instructor guidance and reflective components. This hybrid approach ensures systematic development of resilience rather than episodic self-help use.

Overall, traditional and digital mindfulness practices represent a multidimensional mechanism that strengthens key aspects of professional functioning. For future psychologists, mindfulness is a strategic resource for maintaining emotional balance, supporting mental health, and sustaining an effective therapeutic stance in high-stress conditions. Integrating mindfulness into psychology education is therefore essential for preparing resilient and competent practitioners.

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SUMMARY

The article examines mindfulness as a core psychological mechanism for developing professional resilience in future psychologists. Based on contemporary Ukrainian and international research, mindfulness is conceptualized as a system of self-regulation that enhances cognitive flexibility, emotional stability, intrinsic motivation, and empathic–reflective competencies. Neuropsychological evidence highlights its effects on prefrontal and limbic functioning, reducing stress reactivity and strengthening attentional and emotional control.

The analysis focuses on digital mindfulness tools (Headspace, Calm, Insight Timer, Smiling Mind, Meditopia, Healthy Minds Program, UCLA Mindful), demonstrating their effectiveness in lowering stress, anxiety, and rumination and in fostering mindfulness, self-compassion, and resilience among psychology students. Integrated models combining digital practice with professional training and supervision are identified as most effective.

The findings underscore the potential of both traditional and digital mindfulness practices to support resilience and psychological well-being within the training of helping professionals.

REFERENCES

1. Міщенко М., Батяшова Є. Майндфулнес-техніки для розвитку життєстійкості в умовах війни. *Психологічний журнал.* 2024. № 12. С. 130–136.

2. Мотрук Т. Практика майндфулнес у психотерапевтичній практиці. *Слобожанський науковий вісник. Серія: Психологія.* 2023. № 2. С. 30–36.

3. Петяк О., Комар Т., Вельський Д., Мельничук А. Психологічні інтервенції для підвищення резильєнтності студентів під час воєнних дій. *Соціальна робота та психологія: освіта і наука.* 2025.

4. Abulfaraj G.G., Upsher R., Zavos H.M.S., Dommett E.J. The impact of resilience interventions on university students' mental health and well-being: a systematic review. *Education Sciences.* 2024. 14(5). 510.

5. American Psychological Association (APA). Professional Resilience in Changing Times. Webinar Series. 2024.

6. Amor A., et al. Study of digital approach in education and psychology among selected users in Ukraine. *ResearchGate Preprint.* 2024. 1–12.

7. Ang W.H.D., et al. Digital training for building resilience: systematic review, meta-analysis and meta-regression. *Stress and Health.* 2022. 38. 351–370.

8. Babbage C.M., et al. Self-help digital interventions targeted at improving mental health: a systematic review. *Frontiers in Public Health.* 2022. 10. 946361.Berry D. R., Cairo A. H., Goodman R. J., Quaglia J. T., Brown K. W. Mindfulness increases prosocial responses toward ostracized strangers through empathic concern. *Journal of Experimental Psychology: General.* 2018. 147(12). 1–21.

9. Baek G., Park E., Kang H. Online mindfulness interventions for healthcare workers: A scoping review. *Journal of Medical Internet Research.* 2024. 26. e54321.

10. Błaszczyk M., et al. Coping with adversity: mechanisms of resilience in Ukrainian universities during the Russian-Ukrainian War – a perspective from Lviv University students. *Higher Education.* 2025.

11. Breines J., Chen S. Self-compassion increases self-improvement motivation. *Personality and Social Psychology Bulletin.* 2012. 38(9). 1133–1143.

12. Cai Z., Mydin Kutty F., Amran M.S. The association between mindfulness and learning burnout among university students: a systematic review and meta-analysis. *European Journal of Educational Research.* 2025.

13. Calderone A., Latella D., Impellizzeri F. et al. Neurobiological changes induced by mindfulness and meditation: A systematic review. *Biomedicines.* 2024. 12(11). 2613. URL: https://pubmed.ncbi.nlm.nih.gov/39595177/

14. Chen B., Yang T., Zhu C. Digital mindfulness interventions for university students: A meta-analysis. *International Journal of Mental Health and Addiction.* 2023. URL: https://doi.org/10.1007/s11469-023-01002-3

15. Condon P., Wiltshire J., Siegel E., Brown K. W., Goodman R. J. Meditation in context: Factors that facilitate prosocial behavior. *Neuroscience & Biobehavioral Reviews.* 2019. 96. 182–195.

16. Conversano C., Ciacchini R., Orrù G. et al. Mindfulness, compassion, and self-compassion among health care professionals: What's new? A systematic review. *Frontiers in Psychology.* 2020. 11. 1683.

17. Dou J., Lian Y., Lin L., Asmuri S.N.B., Wang P., et al. Effectiveness of mindfulness-based interventions on burnout, resilience and sleep quality among nurses: a systematic review and meta-analysis. *BMC Nursing.* 2025. 24. 739.

18. Economides M., Martinucci E., MacLean S., Leider S. Improving stress, mood, and well-being in university students via a smartphone-based mindfulness intervention. *Mindfulness.* 2018. 9(5). 1582–1591.

19. Frankova I. Preventing common mental health problems in war-affected Ukrainian populations: digital interventions and phased approaches. *Frontiers in Digital Health.* 2025. 3. Article 1586030. 1–15.

20. Galante J., Bekker M., Vainre M., Wood W. Long-term follow-up of university mindfulness training: Effects on mental health and academic outcomes. *Journal of Affective Disorders.* 2021. 286. 218–226.

21. Galante J., Dufour G., Vainre M. et al. A mindfulness-based intervention to increase resilience to stress in university students (the Mindful Student Study). *The Lancet Public Health.* 2018. 3(2). 72–81.

22. Giordano F., Lipscomb S., Jefferies P., Kwon K-A., Giammarchi M. Resilience processes among Ukrainian youth preparing to build resilience with peers during the Ukraine-Russia war. *Frontiers in Psychology.* 2024. 15. 1331886.

23. González-Martín A.M., Aibar-Almazán A., Rivas-Campo Y., Castellote-Caballero Y., Carcelén-Fraile M. Mindfulness to improve the mental health of university students: a systematic review and meta-analysis. *Frontiers in Public Health.* 2023. 11. 10726040.

24. Guendelman S., Medeiros S., Rampes H. Mindfulness and emotion regulation: Insights from neurobiological, psychological, and clinical studies. *Frontiers in Psychology.* 2017. 8. 220.

25. Herrero R., Franke M., Görlich D., Garcia-Palacios A., Baños R., Jacobi C., Berger T., Schaub M.P., Krieger T., Ebert D.D., Botella C. Efficacy of the internet-based intervention "Cultivating our resilience" (CORE) for improving resilience and coping strategies in university students: a randomized controlled trial. *Internet Interventions.* 2025. 39. 100811.

26. Hölzel B. K., Carmody J., Vangel M. et al. Mindfulness practice leads to increases in regional brain grey matter density. *Psychiatry Research: Neuroimaging.* 2011. 191(1). 36–43.

27. Hölzel B.K., Lazar S.W., Gard T. et al. How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and

neural perspective. *Perspectives on Psychological Science.* 2011a. 6(6). 537–559.

28. Kabat-Zinn J. Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. Revised ed. *Bantam Books.* 2013.

29. Kryazh I. Wartime Ukrainian IT-specialists' wellbeing: internal resilience resources. *Psychology, Society & Education.* 2024. 16. 299–315.

30. Lahutina S., et al. A digital self-help tool to promote mental well-being for Ukrainians in war conditions: study protocol. *Digital Health.* 2024.

31. Larsson M., Berg A., Carlsson A.-C. et al. Digital mindfulness-based interventions for healthcare professionals: A systematic review. *BMC Health Services Research.* 2025. 25. Article 412.

32. Li S., Wang S., Chen X. et al. How does dispositional mindfulness foster prosocial behaviour? *Frontiers in Psychology.* 2024. 15. 1451138.

33. Linardon J., Cuijpers P., Carlbring P., Messer M., Fuller-Tyszkiewicz M. The efficacy of app-based mindfulness interventions for improving mental health: A meta-analysis of randomized controlled trials. *Mindfulness.* 2024. 15(2). 345–360.

34. Liu X., Wang Q., Zhou Z. The association between mindfulness and resilience among university students: A meta-analysis. *Sustainability.* 2022. 14(16). 10405.

35. Lushchak O., et al. Prevalence of stress, anxiety, and symptoms of post-traumatic stress in the general population of Ukraine during the 2022 war. *BMC*. 2023. URL: https://pmc.ncbi.nlm.nih.gov/articles/PMC10665943/

36. Madigan D.J., Kim L.E., Glandorf H.L. Interventions to reduce burnout in students: a systematic review and meta-analysis. *European Journal of Psychology of Education.* 2024. 39. 931–957.

37. Madrid-Cagigal A., Kealy C., Potts C., Mulvenna M., Byrne M., Barry M., Donohoe G. Digital Mental Health Interventions for University Students with Mental Health Difficulties: A Systematic Review and Meta-analysis. *Early Intervention in Psychiatry.* 2025. 19 (3). e70017.

38. Marchand W. R. Neural mechanisms of mindfulness and meditation: Evidence from neuroimaging studies. *World Journal of Radiology*. 2014. 6(7). 471–479.

39. McCormack H., MacIntyre T., & others. The Prevalence and Cause(s) of Burnout Among Applied Psychologists: A Systematic Review. *Frontiers in Psychology*. 2018. 9. 1897.

40. Neff K.D. Self-compassion: Theory, method, research, and intervention. *Annual Review of Psychology.* 2023. 74. 193–218.

41. O'Connor M., Sheridan R., Cosgrove D., Morley S. The efficacy of mindfulness-based interventions in enhancing resilience: A meta-analysis. *Journal of Clinical Psychology.* 2023. 79(5). 1050–1064.

42. Palchuk O. Modernization of education in post-war Ukraine: digital platforms and transformation in higher education. *Education Challenges.* 2025. 6(1). 34–49. Pierce M., Archer L., Daniels R. et al. Daily mindfulness practice through a mobile app and student mental health: A longitudinal analysis. *Journal of American College Health.* 2024. 72(3). 763–772.

43. Pinchuk I., Feldman I., Seleznova V., Virchenko V. Braving the dark: mental health challenges and academic performance of Ukrainian university students during the war. *Social Psychiatry and Psychiatric Epidemiology*. 2025.

44. Polyvianaia M., Yachnik Y., Fegert J.M., Sitarski E., Stepanova N., Pinchuk I. Mental health of university students twenty months after the beginning of the full-scale Russian-Ukrainian war. *BMC Psychiatry*. 2025. 25.236.

45. Rosales-Ricardo Y., Rizzo-Chunga F., Mocha-Bonilla J., Ferreira J. Prevalence of Burnout Syndrome in University Students: A Systematic Review. *Salud Mental*. 2021. 44(2). 91-102.

46. Salvado M., Marques D.L., Pires I.M., Silva N.M. Mindfulness-based interventions to reduce burnout in primary healthcare professionals: A systematic review and meta-analysis. *Healthcare.* 2021. 9(10). 1342.

47. Schäfer S.K., et al. Digital interventions to promote psychological resilience: systematic review and meta-analysis. *npj Digital Medicine.* 2024. 7. 30.

48. Schwartz K., Jones M., Treanor M., Lee E. A systematic review of mobile mindfulness apps in nonclinical populations. *Digital Health.* 2023. 9. 20552076231123450.

49. Segal Z.V., Williams J.M.G., Teasdale J.D. Mindfulness-Based Cognitive Therapy for Depression: A New Approach to Preventing Relapse. 2nd ed. *Guilford Press.* 2013.

50. Shoker D., Desmet L., Ledoux N., Héron A. Effects of standardized mindfulness programs on burnout: A systematic review and original analysis from randomized controlled trials. *Frontiers in Public Health.* 2024. 12. 1381373.

51. Shuliak I. Online education in Ukraine in extreme conditions: constraints and challenges. *CALL E-Journal.* 2024. 25(1). 1–14.

52. Syniuk V. Building Resilience in University Students Amidst Wartime Conditions in Ukraine. *AJPRUI.* 2025.

53. Tang Y.-Y., Tang R., Posner M.I. Mindfulness meditation improves emotion regulation and reduces drug abuse. *Drug and Alcohol Dependence.* 2016. 163(Suppl 1). 13–18.

54. Tolstoukhov A., Lunov V. Educational resilience in turmoil: psychological well-being and mental health among Ukrainian educational

community during the Russo-Ukrainian war. *SSRN Working Paper.* 2023. 4683791.

55. Tomaszek K., & Muchacka-Cymerman A. Be Aware of Burnout! The Role of Changes in Academic Burnout among University Students. *International Journal of Environmental Research and Public Health*. 202. 18(15). 8055.

56. Treves I. N., Taren A. A., Creswell J. D. The mindful brain: A systematic review of the neural correlates of trait mindfulness. *Journal of Cognitive Neuroscience.* 2024. 36(11). 2518–2555.

57. Wang Q., Wang F., Zhang S. et al. Effects of a mindfulness-based interventions on stress and burnout in nurses: A systematic review and meta-analysis. *Frontiers in Psychiatry.* 2023. 14. 1218340.

58. Weisel K.K., Fuhr K., Berking M., Baumeister H., Cuijpers P., Ebert D.D. Standalone smartphone apps for mental health–a systematic review and meta-analysis. *NPJ Digital Medicine.* 2019. 2. 118.

59. Weisz J.R., Steinberg J.S., Sun J., Venturo-Conerly K.E., Sood G., Mair P., et al. Effects of a brief digital problem-solving intervention on depression and anxiety symptoms in Ukrainian children and adolescents displaced by war. *The Lancet Primary Care.* 2025. 1(1). 1–12.

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