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PROSPECTS FOR THE USE OF BIOMETRIC TECHNOLOGIES IN PSYCHOLOGICAL PRACTICE

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Abstract

The study aims to explore the possibilities and attitudes regarding the use of biometric technologies and in psychological practice. Using a questionnaire centered on future projections, data was gathered from respondents aged 18 to 54 who were pursuing a Bachelor's or Master's degree in Psychology and possessed varying levels of knowledge regarding biometric technologies. The research establishes that those technologies will play an increasingly significant role in socio-psychological services, supporting diagnostics and psychotherapy. However, a key challenge remains preserving the human factor and emotional connection in these professions. Projections up to the year 2030 indicate that biometric technologies will be widely integrated into organizational processes, becoming standard assistive tools in socio-psychological practice. Respondents are optimistic that biometric technologies will be used to assess progress in psychotherapy and as an an objective indicator of the effect of interventions for anxiety and trauma. In conclusion, the study highlights the need for a balanced approach to technological changes—one that combines the efficiency of automation with the preservation of emotional intelligence and interpersonal relationships in the workplace

Keywords: *Biometric technologies, psychological practice, projections, diagnostics, psychotherapy.*

1. Introduction

Technological innovation is rapidly transforming the ways in which social and psychological services are delivered. Among the emerging developments, biometric technologies have gained increasing attention for their potential applications in psychological assessment and therapeutic practice. A biometric technology is a system that functions as a pattern recognition mechanism that collects biometric information from an individual, processes this information to extract distinctive features and then compares these features with stored templates in a database to determine a match (Jain et al., 2004). Biometric technology uses measurable physiological or behavioral characteristics to differentiate and identify one individual from another (Abdulrahman & Alhayani, 2021). Leading platforms such as iMotions, Affectiva, FaceReader, and Emotient exemplify the technological progress. These systems combine facial expression analysis with streams of biometric data—including eye tracking, EEG, Facial Expression Recognition—to develop a more nuanced and detailed understanding of emotional dynamics (https://imotions.com/?srsltid=AfmBOooUZX5CQ67wZQeY9s2H6zRv3RvwDN_QQlE5CiaP50Jt_WtEbBa5). These technologies offer new possibilities for collecting objective data about emotional states, attention and behavioral patterns, which may complement traditional methods of psychological evaluation. Such integration creates new opportunities for studying emotional responses in real time across various contexts, ranging from psychotherapy and education to consumer behavior and social neuroscience.

In recent years, the integration of digital tools and data-driven approaches into mental health services has accelerated, particularly in areas such as remote counseling, digital therapy platforms, and automated monitoring systems. Biometric technologies have the potential to enhance these developments by providing real-time physiological feedback that can support diagnostic processes, monitor therapeutic progress, and evaluate the effectiveness of psychological interventions. For example, in psychological therapies psychologists may use measured indicators of a patient's emotional state to adjust the course of treatment according to the individual's needs (Brás et al., 2018). In addition, digital biometric methods for detecting Post-Traumatic Stress Disorder (PTSD) are receiving growing attention. However, their

development has been hindered by variations in study design, inconsistent reporting practices, and insufficient consideration of sex-based differences (Khaing & Nakayama, 2026). Therefore, biometric technologies may be especially valuable in the assessment and treatment of various psychological conditions where physiological indicators often play a significant role. Eye-tracking technology has also become an important methodological tool in psychological research, allowing researchers to objectively measure visual attention and cognitive processing through gaze patterns and fixation behavior (Duchowski, 2017; Holmqvist et al., 2011).

Despite these promising opportunities, the growing use of biometric technologies in psychological practice also raises important professional and ethical questions. One of the central concerns involves the preservation of the human element in therapeutic relationships. Psychological practice traditionally relies on empathy, emotional understanding and interpersonal communication between practitioner and client. The increasing reliance on automated systems and technological mediation may challenge these core components of therapeutic work if not carefully integrated into professional practice.

Given these developments, it is important to examine how future psychologists perceive the role of biometric technologies in their profession. Understanding their expectations, attitudes and concerns can provide insight into how such technologies may be adopted in practice and what challenges may arise during their implementation.

The present study explores the perceptions of psychology students regarding the future use of biometric technologies in socio-psychological services. By examining respondents' projections about technological integration up to the year 2030, the research aims to identify both the perceived benefits and potential limitations of biometric tools in diagnostics, psychotherapy and the evaluation of therapeutic outcomes.

2. Methods

2.1. Procedure

A Delphi-style questionnaire was distributed via Google forms to psychology students. The collected responses were then analyzed. Participants were informed that their involvement was voluntary and that all information would remain confidential. The survey took place in January 2026.

2.2. Participants

The sample consisted of 77 university students, enrolled in bachelor's or a master's programmes in psychology. The stakeholders encompass a diverse range of age groups. Specifically, there are 23 participants aged 18-24, 18 individuals in the 25-34 age group, 23 respondents aged 35-44 ,10 students in the 45-54 age group and 3 individuals aged 55-64. The majority of participants were female (n = 70), with 7 males.

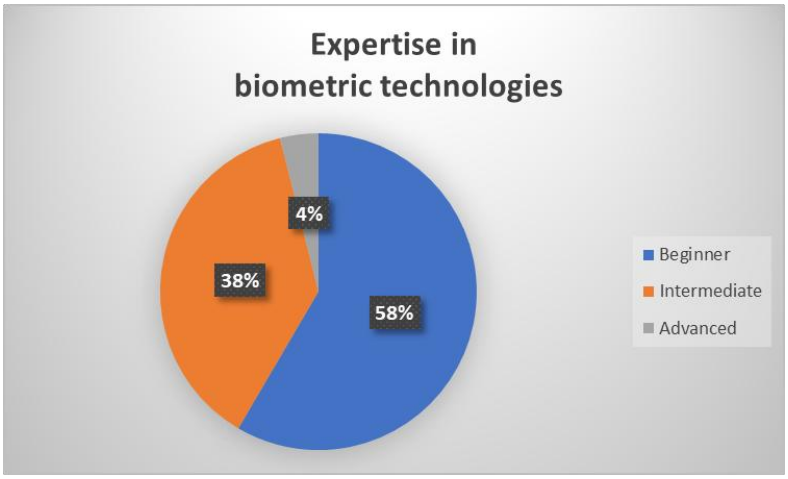
2.3. Measures

The study employed a specially designed survey comprising 10 statements, each examining various aspects of biometric technologies in psychology. The research aimed to assess the potential applications in the mid-term of these technologies within psychological practice in Bulgaria where their adoption remains limited and they are not yet widely implemented.

3. Analysis of results

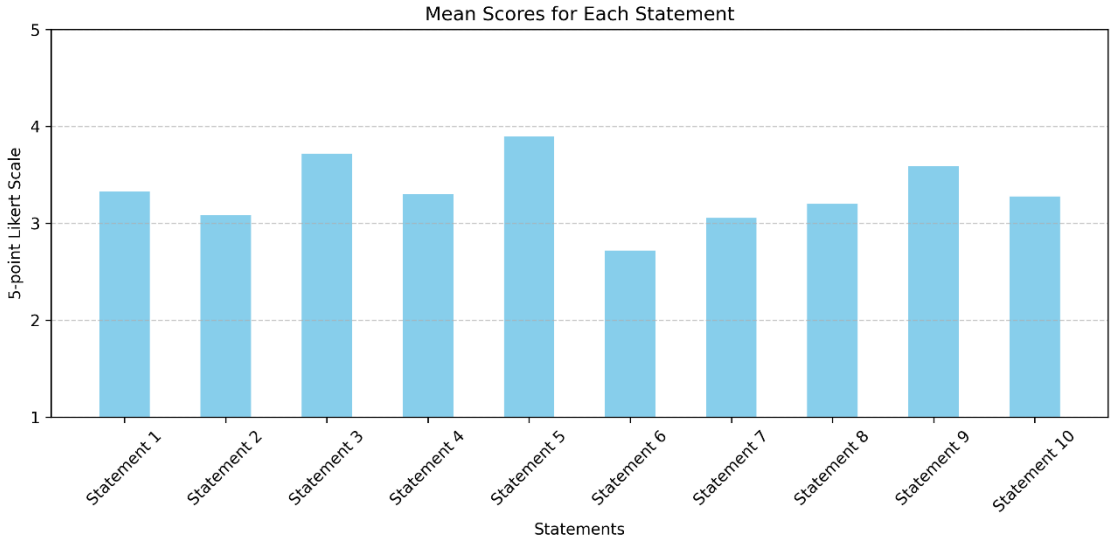
The majority of respondents (58%) reported having beginner-level knowledge of biometric technologies, indicating limited familiarity with these tools. A substantial portion (38%) described themselves as having intermediate expertise, suggesting a moderate understanding of the concepts and applications. Only a small minority (4%) considered themselves advanced users, highlighting that highly experienced individuals in biometric technologies are rare among the sample. This distribution suggests that most participants may have basic exposure to biometric technologies, which could influence their perceptions, attitudes and expectations regarding the use of these tools in psychological practice. The results can be seen in Figure 1.

Figure 1.



To address our research objective, we analyzed the response patterns on the 5-point Likert scale. The answers range from 1- not likely at all to 5- highly likely. Figure 2 presents the distribution of responses for all ten survey statements. Most statements fall in the moderately likely range (3), indicating that respondents generally expect these outcomes related to biometric technologies to come true, but with some caution. Statement 5, which states "By 2030, at least one biometric technology platform will be available in Bulgarian (including interface/documentation/training)", stands out as the highest mean (4.00), showing strong confidence or agreement. Statement 6, stating "By 2030, biometric tools will be implemented in at least 50% of psychological centers of various institutions (schools, hospitals)", has the lowest mean (2.67), indicating uncertainty or less expectation that this scenario will occur in the near future.

Figure 2.



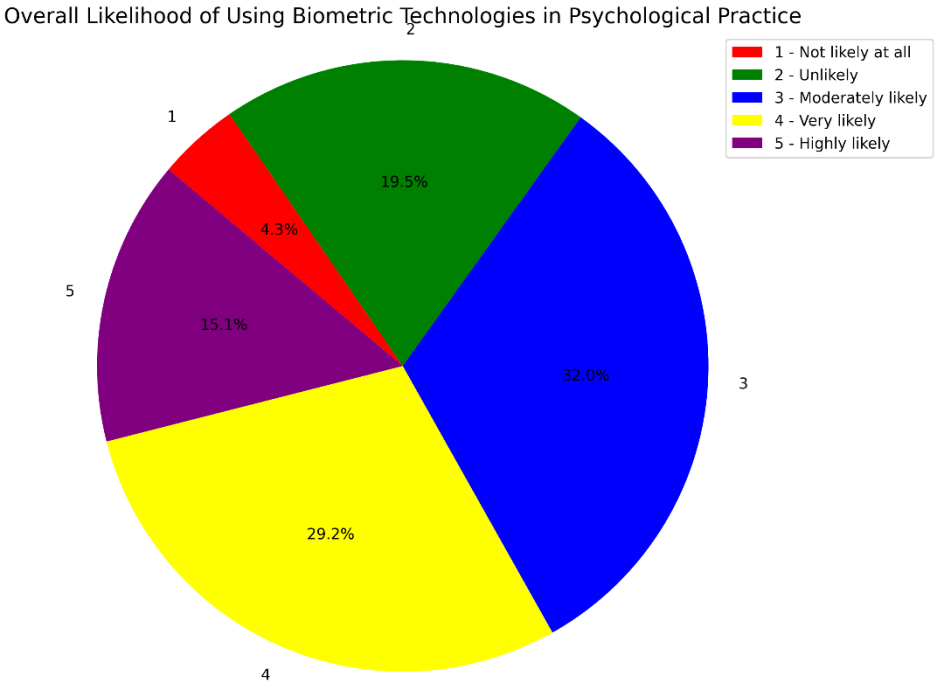
The overall distribution of responses across all survey statements indicates a generally positive expectation regarding the use of biometric technologies in psychological practice. The largest proportion of responses falls within the moderate likelihood category (3- moderately likely), accounting for 32.0% of responses. This suggests that many respondents perceive the future integration of biometric technologies as possible but with some uncertainty.

A substantial share of participants selected 4 – very likely (29.2%), indicating that they consider the adoption of these technologies likely. Additionally, 15.1% of responses fall within the highest category (5 – highly likely), reflecting a notable level of confidence in the future implementation of biometric technologies in psychological practice.

In contrast, lower likelihood responses were less common. Only 19.5% of responses correspond to 2 (unlikely) and 4.3% to 1 (not at all likely), suggesting that relatively few respondents strongly doubt the potential integration of such technologies.

Overall, the results indicate a moderately optimistic outlook, with the majority of responses concentrated in the middle-to-upper range of the Likert scale (3–5). This pattern suggests that psychology students generally expect biometric technologies to play a role in future psychological practice, although some degree of uncertainty remains. The results can be seen in Figure 3.

Figure 3.



4. Discussion

The findings of this study provide insight into psychology students' expectations regarding the future use of biometric technologies in psychological practice. Overall, the distribution of responses across the Likert scale indicates a moderately optimistic outlook toward the integration of such technologies. Most responses were concentrated in the middle and higher categories of the scale (3–5), suggesting that respondents generally perceive biometric technologies as likely to become part of psychological practice, although some uncertainty remains. The highest proportion of responses fell within the moderate likelihood category, which may reflect the current stage of technological adoption in psychological practice, particularly in the Bulgarian context where biometric technologies are not yet widely implemented. The results also need to be interpreted in light of the participants' level of familiarity with biometric technologies. As indicated in the study, the majority of respondents identified themselves as beginners in this area. This limited level of expertise may partially explain the moderate rather than strongly positive expectations observed in the data. As knowledge and exposure to biometric technologies increase during professional training and practice, attitudes toward their implementation may also become more favorable.

Overall, the findings suggest that psychology students recognize the potential benefits of biometric technologies, particularly as supportive tools that could enhance diagnostic accuracy, monitor emotional and physiological responses, and evaluate therapeutic progress. However, respondents also appear to view these technologies primarily as complementary instruments rather than replacements for traditional psychological methods.

Acknowledgments

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