

ENHANCING GROUP PSYCHOLOGICAL COUNSELLING THROUGH AI-DRIVEN ETHICAL DIGITALISATION

Jieying Li^{1*}, Pengsen Li²

Abstract: This qualitative study explores the integration of Artificial Intelligence (AI) in group psychological counselling within wellness education through an ethical and interdisciplinary framework. Drawing on 30 in-depth interviews with educators and mental health professionals, the research examines perceptions of ethical digitalisation, the application of knowledge graphs for personalised emotional mapping, the role of outcome-based education (OBE) in structuring measurable psychological goals, and the impact of industry-education collaboration in co-developing AI tools. Thematic analysis identified five overarching domains: ethical governance, data-driven personalisation, outcome alignment, collaborative innovation, and cultural responsiveness. Findings reveal both enthusiasm for AI's potential to enhance support and significant concerns regarding privacy, algorithmic bias, institutional barriers, and the need for human-centred design. The study concludes that effective implementation requires robust ethical frameworks, continuous stakeholder engagement, and adaptive educational structures. These insights offer a conceptual foundation for designing AI-supported counselling systems that align with psychological development goals while safeguarding ethical integrity in diverse educational environments.

Keywords: ethical digitalisation, group psychological counselling, knowledge graphs, outcome-based education, industry education collaboration

Mejora de la terapia psicológica grupal mediante la digitalización ética impulsada por IA

Resumen: Este estudio cualitativo explora la integración de la Inteligencia Artificial (IA) en la terapia psicológica grupal dentro de la educación para el bienestar, desde una perspectiva ética e interdisciplinaria. A partir de 30 entrevistas en profundidad con educadores y profesionales de la salud mental, la investigación examina las percepciones sobre la digitalización ética, la aplicación de grafos de conocimiento para la elaboración de mapas emocionales personalizados, el papel de la educación basada en resultados (EBR) en la estructuración de objetivos psicológicos medibles y el impacto de la colaboración entre la industria y la educación en el codesarrollo de herramientas de IA. El análisis temático identificó cinco dominios principales: gobernanza ética, personalización basada en datos, alineación de resultados, innovación colaborativa y sensibilidad cultural. Los hallazgos revelan tanto el entusiasmo por el potencial de la IA para mejorar el apoyo, como importantes preocupaciones respecto de la privacidad, el sesgo algorítmico, las barreras institucionales y la necesidad de un diseño centrado en el usuario. El estudio concluye que una implementación efectiva requiere marcos éticos sólidos, la participación continua de las partes interesadas y estructuras educativas adaptativas. Estas perspectivas ofrecen una base conceptual para el diseño de sistemas de asesoramiento psicológico con apoyo de IA que se alineen con los objetivos de desarrollo psicológico, salvaguardando la integridad ética en diversos entornos educativos.

Palabras clave: digitalización ética, asesoramiento psicológico grupal, grafos de conocimiento, educación basada en resultados, colaboración entre la industria y la educación

Aprimorando o aconselhamento psicológico em grupo por meio de digitalização ética orientada por IA

Resumo: Esse estudo qualitativo explora a integração de Inteligência Artificial (IA) em aconselhamento psicológico em grupo dentro da educação para o bem estar através de uma estrutura ética e interdisciplinar. Com base em 30 entrevistas aprofundadas com educadores e profissionais de saúde mental, a pesquisa examina percepções sobre digitalização ética, a aplicação de gráficos de conhecimento para mapeamento emocional personalizado, o papel da educação baseada em desfechos (OBE) na estruturação de objetivos psicológicos mensuráveis e o impacto da colaboração entre indústria e educação no desenvolvimento conjunto de ferramentas de IA. Análise temática identificou cinco domínios abrangentes: governança ética, personalização orientada por dados, alinhamento de resultados, inovação colaborativa e sensibilidade cultural. Os achados revelam tanto entusiasmo para o potencial da IA para aprimorar o apoio quanto preocupações significativas com respeito à privacidade, vies algorítmico, barreiras institucionais e a necessidade de um design centrado no ser humano. O estudo conclui que a implementação efetiva requer contexto ético robusto, engajamento contínuo das partes interessadas e estruturas educacionais adaptativas. Esses insights oferecem uma base conceitual para o desenvolvimento de sistemas de aconselhamento apoiados por IA que estejam alinhados com os objetivos de desenvolvimento psicológico, ao mesmo tempo que salvaguardam a integridade ética em diferentes ambientes educacionais.

Palavras chave: digitalização ética, aconselhamento psicológico em grupo, gráficos de conhecimento, educação baseada em desfechos, colaboração entre indústria e educação

¹ Basic Courses Department, Southwest Jiaotong University Hope College, Jintang County, Chengdu, Sichuan Province, China.

Corresponding author: lijieying00001@163.com

² Basic Courses Department, Southwest Jiaotong University Hope College, Jintang County, Chengdu, Sichuan Province, China, 18280095984@163.com

Introduction

The increasing global demand for mental health support has established group psychological therapy as an essential element of wellness education, especially in the education sector(1). The evolving mental health requirements of students, educators, and administrators necessitate the incorporation of modern digital technologies, particularly artificial intelligence (AI), which serves as a potent facilitator of scalable, responsive, and contextually pertinent therapies. The swift implementation of AI-driven solutions prompts substantial ethical concerns related to data protection, consent, algorithmic transparency, cultural sensitivity, and the psychological effects of human-computer interaction(2, 3). Resolving these difficulties necessitates a deliberate and interdisciplinary approach that integrates technical innovation with ethical accountability and educational objectives(4,5).

The research aims to investigate how artificial intelligence can ethically enhance group counselling methodologies while respecting the values and needs of diverse educational groups.

This framework is developed through a qualitative research design utilising in-depth, semi-structured interviews. The research encompassed 30 specialists from China, South Korea, Pakistan, and Iran, chosen by purposive sampling based on their expertise in wellness education, mental health, and educational technology. This varied sample guaranteed cultural and institutional diversity in viewpoints toward AI integration. Participants exhibited variations in data ethics, AI adoption rates, counselor training, and governance structures, enhancing the study's comparative rigor. The data gathering process adhered to rigorous study guidelines established beforehand by the primary investigator, guaranteeing complete compliance with international ethical standards for qualitative research.

The ethical perspective is crucial to this research and was meticulously analyzed throughout the study, especially in relation to wellness education. The ethical dimension encompasses questions of informed consent, digital well-being, equitable access, inclusion, and the appropriate utilisation of AI tools. The study examines the use of ethical

digitalisation in group counselling settings while maintaining the integrity and psychological safety of participants. To uphold the integrity and psychological safety of all participants, we secured informed consent before each interview, explicitly detailing the study's goal, the voluntary nature of participation, and the guarantee of anonymity. Interviews were performed in compliance with institutional ethical norms, ensuring respectfulness, non-invasiveness, and support for participants' emotional well-being.

The suggested framework incorporates knowledge graphs to assist AI in delineating emotional states, social dynamics, and counselling pathways(6). It utilises outcome-based education (OBE) to synchronise counselling techniques with quantifiable objectives for emotional and cognitive development. Moreover, it underscores the necessity of collaboration between industry and education to guarantee that the AI tools created are not just innovative but also practical, scalable, and pertinent to actual educational environments(7).

This study aims to provide a theoretical contribution and practical suggestions for institutions seeking to improve group psychological therapy through ethical, AI-driven digitalisation by utilising interdisciplinary theories and lived experiences. The results are anticipated to guide educational policy, enhance curriculum development in wellness education, and enrich the international dialogue on responsible AI in mental health services.

Research Questions

1. How do educators and mental health professionals within the wellness education sector perceive the ethical implications of integrating AI into group psychological counselling? Focus: *Ethical digitalisation in counselling*
2. In what ways can knowledge graphs be utilised to enhance the effectiveness and personalisation of AI-supported group psychological counselling in wellness education? Focus: *Use of knowledge graphs for AI implementation*
3. How can outcome-based education principles

be embedded into AI-driven group counselling models to support measurable emotional and psychological development among students?
Focus: *Integration of outcome-based education*

4. What are the perceived benefits and challenges of fostering industry-education collaboration in the development and deployment of AI tools for group psychological counselling in wellness education?
Focus: *Role of industry-education collaboration*

Literature review

This literature review aims to investigate and critically assess existing research across several categories pertinent to the ethical digitisation of group psychological counselling in wellness education. The literature review integrates current research from educational psychology, artificial intelligence in mental health technologies, and ethical digital innovation. The aim is to establish a unified framework that connects disparate disciplines, facilitating a comprehensive comprehension of AI's responsible and effective integration into group psychological counselling in educational settings. Some studies emphasise the digital transformation of counselling services, showcasing the advantages of automation, personalisation, and scalability (8). In contrast, others express concerns regarding the dehumanisation of treatment, ethical issues, and the potential for technology reliance. Conversely, studies in wellness education prioritise comprehensive methods for student development, incorporating emotional, cognitive, and social advancement through organised support initiatives(9). Nonetheless, there exists minimal integration between wellness education frameworks and nascent AI applications, particularly in group counselling settings. This review situates itself at the convergence of disparate literatures, seeking to identify deficiencies, compare theoretical perspectives, and provide a cohesive basis for establishing an ethical, AI-enhanced counselling framework specifically designed for the wellness education sector(10).

Group Psychological Counselling in Educational Contexts

Group psychological counselling has emerged as an essential element of wellness education, provi-

ding students with a supportive setting to confront emotional, psychological, and social issues collectively. Research indicates that group counselling fosters a sense of belonging, emotional articulation, and peer affirmation, which are particularly beneficial in educational environments aimed at holistic development(11). Diverse therapeutic models—such as cognitive-behavioural group therapy, humanistic methods, and solution-focused group interventions—have been tailored to accommodate the distinct dynamics of educational institutions(12, 13). These paradigms prioritise contact, empathy, and collective experiences, promoting individual understanding and community unity. Traditional delivery methods frequently encounter obstacles, including a shortage of experienced facilitators, time limits, stigma around help-seeking, and uneven participation. Certain studies suggest that in extensive educational environments, maintaining confidentiality and regulating group dynamics can become complex. These limitations underscore the necessity for creative solutions, such as AI-assisted tools, that can augment established approaches while improving the accessibility, consistency, and scalability of group counselling in wellness education(14).

Artificial Intelligence in Mental Health and Education

The incorporation of artificial intelligence into mental health services has created revolutionary opportunities, especially in psychological counselling. AI solutions, including virtual counselling agents, emotion-recognition systems, predictive analytics, and adaptive learning platforms, have shown promise in enhancing both individual and group counselling processes. In educational environments, AI-assisted therapies are progressively employed to assess student well-being, provide tailored mental health resources, and mimic therapeutic interactions(15). When ethically built and culturally adapted, AI systems can provide scalable psychological support through timely interventions, especially in underprivileged or high-demand educational settings. Recent research indicates that such systems have the potential to enhance access to mental health resources while alleviating the operational burden on human counsellors. Nonetheless, although some studies highlight the advantages of efficiency, scalability,

and data-driven insights, others express considerable apprehension regarding the ethical and emotional ramifications of AI-driven therapy. Risks encompass violations of confidentiality, algorithmic bias, absence of human empathy, and excessive dependence on technology in emotionally complex scenarios. The literature presents a range of viewpoints: some scholars advocate for AI as a beneficial adjunct to human-driven psychological services, highlighting its capacity to improve scalability and personalisation; others warn against its swift deployment without comprehensive ethical, clinical, and contextual assessment. This disparity underscores the necessity for a balanced, interdisciplinary approach to integrating AI into mental health care systems. These discussions highlight the need for ethically based frameworks that guarantee Wellness education has intricate emotional, psychological, and ethical aspects. Consequently, it necessitates deliberate and contextually aware interventions emphasizing safety, inclusion, and psychological well-being. This requires a careful and evidence-based use of technology, such as AI, in wellness counselling(16, 17).

Ethical Digitalisation in Wellness Education

The ethical digitisation of wellness education has been a pivotal concern as institutions progressively incorporate AI technologies into mental health and counselling services. Central to digital wellness are ethical values like respect for autonomy, data privacy, informed consent, and emotional safety, all of which are crucial when engaging with vulnerable groups such as students in need of psychiatric care. The incorporation of AI into these services presents intricate ethical dilemmas. Research highlights concerns such as algorithmic bias, where AI systems may yield distorted results due to unrepresentative data, and privacy threats arising from the collection and analysis of sensitive psychological data(18, 19).

Moreover, concerns about user autonomy are significant, especially when AI systems begin to influence decision-making in therapeutic contexts. Academics underscore the necessity of culturally sensitive and inclusive digital methodologies, asserting that AI tools should be developed to cater to varied social, emotional, and linguistic contexts to prevent marginalization(20). Despite increasing

awareness, the literature indicates a deficiency in standardised ethical frameworks and institutional norms to direct the responsible application of AI in wellness education. This gap requires the formulation of context-specific ethical principles that address technology accountability while aligning with the values and objectives of wellness-oriented educational settings(21, 22).

Knowledge Graphs in AI and Psychological Applications

Knowledge graphs, as semantic technologies designed to depict structured relationships among concepts, have demonstrated interesting applications in the fields of psychology and behavioral sciences. These AI tools allow machines to comprehend and contextualise human experiences by mapping emotional states, behaviours, and psychological constructs via interconnected data points. In psychological applications, knowledge graphs enhance understanding of mind, emotion, and social dynamics by integrating diverse information sources, such as verbal replies, facial expressions, and digital behaviour, into cohesive semantic networks. Recent research has examined their effectiveness in modelling personal emotional trajectories and group dynamics, particularly in therapeutic settings where comprehension of social influence, empathy, and relational patterns is essential(23, 24).

In group therapy contexts, knowledge graphs can elucidate the relationships among participants' common issues or emotional states, providing counsellors with a real-time, data-informed framework for directing therapies. The application of knowledge graphs, often utilised in medical or informational retrieval systems, to mental health and counselling contexts signifies a groundbreaking multidisciplinary transition. Nonetheless, experts acknowledge problems, including the difficulty of encapsulating nuanced human emotions within rigid semantic frameworks and ensuring the interpretability and transparency of the AI's recommendations. Nevertheless, the capacity of knowledge graphs to enhance psychological modelling and group counselling techniques remains an expanding field of inquiry, particularly within ethically principled educational settings(25, 26).

Outcome-Based Education (OBE) and Its Application in Counselling

Outcome-Based Education is a learner-centred approach that emphasizes the achievement of clearly defined learning outcomes, guiding both instructional strategies and assessment practices. Traditionally utilised in academic and skill-based learning settings, OBE has received increasing scholarly attention over time for its potential to improve educational accountability and learner-centric assessment frameworks. Academics contend that incorporating OBE concepts into group psychological counselling offers a systematic framework for establishing therapeutic objectives, monitoring emotional advancement, and assessing the efficacy of interventions. By pinpointing specific emotional or behavioural outcomes, such as enhanced self-awareness, resilience, or group communication, counselling sessions can be synchronised with overarching educational goals(27, 28).

The utilisation of AI in this context optimises the process by providing tools that assess progress via sentiment analysis, behaviour monitoring, and feedback mechanisms, facilitating real-time modifications to counselling tactics. Some studies commend the integration of OBE and AI-assisted counselling for enhancing responsibility and personalisation, while others warn against oversimplifying intricate emotional development into quantitative measures. Nevertheless, the integration of OBE principles with AI technology presents considerable potential for developing more focused, adaptive, and results-oriented psychological support systems in education(29, 30).

Industry-Education Collaboration in Digital Innovation

Collaboration between industry and education in digital innovation has emerged as a vital catalyst for technical progress in educational and psychological support systems. Diverse collaboration models—spanning strategic partnerships, joint research initiatives, and co-developed platforms—illustrate how educational institutions and the technology sector can work together to tackle complex issues such as digital mental health and the integration of ethical AI. These collaborations

have resulted in the co-creation of AI tools that are both technically sound and rooted in pedagogical and psychological ethics, ensuring conformity with educational principles and student well-being(31).

The success of such collaborations depends on numerous critical variables, including mutual trust, aligned objectives, honest communication, and the incorporation of diversified skills. Research identifies prevalent problems, including misaligned priorities, data governance complications, and power disparities that may obstruct fair development and execution. Despite these challenges, when well managed, such partnerships can yield new, context-specific solutions that improve the digital counselling framework in educational environments while upholding ethical standards and inclusion(32).

Interdisciplinary Frameworks in Education and Technology

Interdisciplinary frameworks that integrate education, psychology, and computer science are crucial for creating holistic solutions in technologically advanced learning and counselling settings. Psychological theories highlight human growth, emotional intelligence, and behavioural modification, whereas educational theory offers learner-centred pedagogy and outcome-based evaluation. Computer science, especially via artificial intelligence, facilitates data-driven decision-making, automation, and adaptive technology(33, 34).

Although current frameworks like socio-technical systems, digital learning ecosystems, and AI-informed educational interventions strive to amalgamate these fields, they frequently fail to encompass the intricate nuances of human emotions, ethical implications, and contextual variability, particularly in the realm of mental health and wellness education(13, 35). Numerous frameworks either rely excessively on technological competencies without adequate psychological foundations or concentrate only on academic results while neglecting emotional health. This highlights a substantial deficiency in the existing literature: an absence of comprehensive, morally grounded, and pragmatically applicable models that effectively synthesise ideas from all three domains (35, 36).

Rectifying this deficiency is essential for promoting AI-enhanced group psychological counselling in wellness education, guaranteeing that forthcoming frameworks are multidisciplinary both in theory and application(37).

Global and Cross-Cultural Perspectives on Wellness and Ethics

Global and cross-cultural perspectives on wellness and ethics reveal significant disparities in the understanding, practice, and institutionalization of psychological well-being and counseling across various nations. In certain areas, wellness education prioritises mindfulness, community support, and holistic development, whilst others implement more clinical, regimented methodologies based on medical or behavioural frameworks. The disparities are additionally manifested in the ethical standards regulating psychiatric therapy, wherein cultural norms influence concepts of privacy, autonomy, emotional expression, and the authority's role in therapeutic partnerships(38, 39).

AI integration in various educational environments may be affected by cultural orientations, such as collectivism and individualism, which shape counseling expectations, privacy standards, and participation behaviors. Collectivist societies often prioritize communal welfare and collaborative decision-making, whereas individualistic cultures emphasize personal autonomy and privacy. These distinctions can influence the perception and utilization of AI-driven counseling solutions(40, 41). This global viewpoint emphasises the necessity for cross-cultural research and policy discussions that connect technical advancement with ethical awareness in wellness education systems(42, 43).

Methodology of the Study

The research utilized a semi-structured qualitative interview methodology with 30 educators and mental health practitioners engaged in wellness education across several institutions. The interview guide included four primary open-ended questions, each designed to investigate a significant thematic area pertinent to the study's interdisciplinary framework: (1) ethical digitalization in AI-assisted counseling, (2) utilization of knowledge graphs, (3) incorporation of outcome-

based education, and (4) collaboration between industry and education.

The questions were intentionally expansive, allowing participants to contemplate, elaborate, and contextualize their answers according to personal experiences, institutional practices, and professional viewpoints. Interviewers employed probing approaches to enhance the exploration of each subject area, frequently leading to discussions lasting 30 to 45 minutes per participant. This method conforms to established qualitative approaches, wherein the depth is attained through the narrative richness and theme saturation rather than solely through the number of structured prompts(44). The research is based on an interpretivist framework that highlights the collaborative creation of meaning between the researcher and the participants(45).

Research Context and Parameters

The research was carried out in many nations, concentrating primarily on organisations and professionals engaged in the wellness education field. Cross-cultural design enhances the comprehension of the interpretation and implementation of ethical AI-driven innovations in group psychological counselling across various educational environments (45, 46).

Participants and Sampling Methodology

Thirty participants were selected using purposive sampling, focusing on persons directly engaged in wellness education and psychological therapy inside educational institutions. Participants comprised counsellors, educators, academic psychologists, digital education professionals, and institutional policy developers. The varied responses gathered from culturally and professionally diverse participants provided a broad understanding of how AI tools are perceived and applied within group psychological counselling across different wellness education contexts.

Method of Data Collection

Data was gathered via semi-structured interviews, facilitating the exploration of specific themes while ensuring consistency among participants

(47). Each interview lasted 45 to 60 minutes and was performed either in person or over secure video conferencing services, contingent upon the participant's location and preference. Interview enquiries centred on participants' experiences with group therapy, perspectives on AI-driven technologies, attitudes towards ethical digitalisation, understanding of multidisciplinary integration, and institutional support systems.

Interview Protocol and (47)s

- An interview guide was developed based on the key thematic areas of the research:
- Role of AI in group counselling processes
- Ethical implications and cultural considerations
- Use of knowledge graphs in psychological modelling
- Outcome-Based Education and Counselling Integration
- Industry-education collaboration. All interviews were recorded (with prior consent) and later transcribed verbatim for thematic analysis.

Data Analysis

Thematic analysis was used to interpret the qualitative data. The analysis followed Braun and Clarke's six-phase approach(48):

- Familiarisation with data
- Generating initial codes
- Searching for themes
- Reviewing themes
- Defining and naming themes
- Producing the report

NVivo software was used to assist with organizing and coding qualitative data. Patterns, themes, and categories were developed inductively to ensure authenticity and coherence with participants' narratives.

Reliability and Precision

Member verification was conducted to establish

trustworthiness, allowing participants to access summaries of their comments for accuracy confirmation. Transferability was preserved by comprehensive descriptions of the environment, participants, and methodologies employed. Dependability was guaranteed via a comprehensive audit trail of all research procedures, while confirmability was addressed through the maintenance of reflective journals to track researcher bias(49).

Ethical Considerations

This research was conducted in accordance with the ethical guidelines governing studies involving human participants. Ethical approval was acquired from a participating university in Pakistan(50).

All participants received an informed consent form detailing the study's objectives, methodologies, potential risks, and their rights, including the option to voluntarily participate and withdraw at any point. Anonymity and confidentiality were strictly maintained through several precautions. All participant data were pseudonymized throughout transcription and analysis, stored on encrypted, password-protected devices, and accessible solely to the core study team. No personally identifying information was documented or revealed at any study phase.

Data Analysis³

Ethical digitalisation in counselling

Table 1 and Table 2 provide a thematic analysis of interview responses regarding how educators and mental health professionals within the wellness education sector perceive the ethical implications of integrating AI into group psychological counselling, with a focus on ethical digitalisation. The most frequently cited theme was Ethical Governance (23.3%), which encompasses concerns around oversight, policy boundaries, institutional guidelines, protocol development, ongoing monitoring, and system alignment. This reflects a strong emphasis on establishing structured and accountable frameworks to manage AI ethically within counseling contexts. A human-centered approach was closely followed, with 20%, highlighting the importance of empathy, human connection, in-

³ Todas las tablas se publican luego de las referencias.

clusion, dialogue, support, and trust in therapeutic environments, as well as the professionals' desire to retain these values alongside technological tools. Privacy and data ethics, as well as algorithmic fairness, were both noted at 13.3%, indicating substantial concern over issues such as data security, consent, confidentiality, transparency, and AI biases—factors that could significantly impact the integrity and equity of digital counseling interventions. Meanwhile, Cultural Sensitivity, Educational Integration, and Critical Reflection each accounted for 10% of the responses, underscoring the need to adapt AI ethically across diverse cultural contexts, integrate interdisciplinary training, and maintain a critical stance toward the limitations and risks of automation. Overall, the data reveal a multi-dimensional awareness among practitioners, with governance and human values emerging as top priorities in ethically navigating AI in group counseling.

Use of knowledge graphs for AI implementation

The analysis of Table 3 and Table 4 reveals that knowledge graphs play a multifaceted role in enhancing AI-supported group psychological counseling within wellness education. The most frequently cited thematic areas—Personalization & Adaptability, Emotional & Behavioral Mapping, Semantic & Contextual Accuracy, AI Decision Support, and Data Structuring & Intelligence—each with a 16.7% share, highlight the core strengths of knowledge graphs in enabling tailored, emotionally intelligent, and data-informed counseling processes. These areas collectively emphasize how knowledge graphs support dynamic, student-specific interventions while maintaining therapeutic coherence and ethical alignment. Slightly less frequent but still important, Group & Peer Interaction (13.3%) reflects the value of understanding interpersonal dynamics, while Cultural Sensitivity (3.3%) suggests an area needing more focus in future applications. Overall, the findings indicate that knowledge graphs are central to creating responsive, ethical, and effective AI-driven counseling environments in wellness education.

Integration of outcome-based education

Tables 5 and 6 provide an insightful analysis of how outcome-based education (OBE) principles

can be integrated into AI-driven group counseling models within the wellness education sector. The thematic word “Goal-Setting & Alignment” (20%) captures the necessity for clear learning outcomes, goal-setting processes, and aligning counseling sessions with the broader educational curriculum to guide the therapeutic process. The “Measurement & Evaluation” theme (20%) highlights the need for concrete, measurable goals, indicators, and performance metrics such as psychological KPIs and rubrics, ensuring that emotional and psychological progress is tracked and evaluated systematically. The theme “Data-Driven Adaptation” (20%) reflects the role of AI in continuously adapting the counseling approach based on real-time data, using progress tracking, analytics, feedback loops, and AI-driven milestones to tailor sessions to individual student needs. Finally, the “Psychological Competency & Development” theme (40%) emphasizes the integration of competencies such as social-emotional learning (SEL) standards, behavioral trends, and holistic emotional development assessment tools, which are critical in fostering overall psychological well-being. The findings underscore the holistic and adaptable nature of AI-supported counseling models, designed to track and enhance student development while aligning with OBE principles.

Interview Responses – Industry-Education Collaboration

The analysis of Table 7 and Table 8 reveals a nuanced understanding of the perceived benefits and challenges of fostering industry-education collaboration in the development and deployment of AI tools for group psychological counselling in wellness education. The most dominant themes, each with a 16.7% frequency, are Strategic Co-Development and Ethical & Privacy Considerations. This indicates that respondents highly value collaborative design, pilot testing, and feedback mechanisms with industry, while also expressing deep concerns over ethical boundaries, data ownership, and the risk of commercialization overpowering student welfare.

Institutional Barriers (13.3%) and Infrastructure & Innovation (13.3%) were highlighted as key challenges, with issues such as unclear policies, communication gaps, and a lack of readiness in

educational institutions to accommodate rapid tech advancements. Educational Alignment (13.3%) also emerged as a vital theme, pointing to the importance of harmonizing technological innovation with curricular relevance and inclusivity. On the opportunity side, Professional Development (10%) reflects how such collaborations can provide mentorship, exposure, and training for educators and counselors.

Less frequently mentioned but still notable were Resource Constraints (6.7%) and Governance & Regulation (6.7%), indicating concerns about funding sustainability and the need for structured oversight frameworks. Cultural Collaboration (3.3%), though least mentioned, highlights an essential aspect—balancing pedagogical values with technological input while ensuring mutual respect.

Final Thematic Grouping into 5 Core Key Words

The final thematic grouping table 9 provides a comprehensive synthesis of insights derived from the study, aligning closely with the research title, “Enhancing Group Psychological Counselling through AI-Driven Ethical Digitalisation: An Interdisciplinary Framework Integrating Knowledge Graphs, Outcome-Based Education, and Industry-Education Collaboration.” The most emphasized theme, AI Intelligence & Data Structuring (30%), reflects participants’ recognition of the need for technically sound AI systems that can deliver contextual accuracy, fairness, predictive insights, and robust data tracking within group counselling. Ethical & Human-Centered Governance (20%) follows closely, highlighting essential concerns around trust, oversight, and data ethics—underscoring that technological advancement must be balanced with human dignity and accountability. Personalization & Psychological Development (20%) emphasizes that AI must enhance emotional support, social-emotional learning, and individualized development, echoing the core objective of psychological counselling. Strategic Collaboration & Institutional Integration (18.3%) brings attention to the enabling role of joint efforts between industry and education sectors, pointing to the infrastructural, cultural, and policy-based mechanisms necessary for sus-

tainable implementation. Lastly, Goal-Oriented Counseling Models (11.7%) reinforce the role of outcome-based education in designing AI tools that align with measurable developmental goals. Collectively, these thematic pillars affirm the need for an ethical, personalized, technically advanced, and collaboratively implemented AI framework for group psychological counselling in wellness education.

Discussions and recommendations

This study’s findings highlight the urgent necessity for creating morally robust, individualized, and cooperative frameworks for incorporating AI into group psychological counselling in wellness education. The rise of fundamental topics such as AI Intelligence and Data Structuring, Ethical and Human-Centered Governance, and Strategic Collaboration indicates the diverse expectations that educators and mental health professionals hold for AI systems. Participants demonstrated robust endorsement for the utilization of knowledge graphs to improve semantic precision and contextual comprehension, facilitating AI in the mapping of emotions and behaviors within dynamic group environments. Moreover, outcome-based education (OBE) has arisen as an effective framework for organizing goal-directed, quantifiable counseling sessions. Nonetheless, apprehensions about prejudice, data exploitation, autonomy, and institutional preparedness suggest that the implementation of AI requires meticulous regulation and ongoing oversight. Collaboration between educational institutions and the technology sector is viewed as both an opportunity and a challenge; successful partnerships can foster innovation, however, also necessitate mutual ethical standards, professional growth, and infrastructural coherence.

This study presents both an empirical exploration and a conceptual framework that advocate for a systematic and interdisciplinary approach to the ethical development of AI tools for group psychological counselling in wellness education, grounded in qualitative insights from international experts. AI systems must incorporate ethical rules, encompassing privacy protections, bias reduction methods, and means for human monitoring. Secondly, knowledge graphs and outcome-oriented educational frameworks must be strategically align-

ned to customize learning trajectories, monitor psychological advancement, and inform intervention strategies. Third, capacity-building initiatives must be institutionalized, emphasizing the training of educators and mental health practitioners in AI literacy and ethical application. Ultimately, the partnership between industry and education must be institutionalized via co-development laboratories, joint governance frameworks, and policy agreements that guarantee AI tools prioritize human-centered objectives over commercial interests. Collectively, these ideas provide a framework for ethically guided, flexible, and results-oriented AI inclusion within the wellness education landscape.

Conclusion

This study emphasizes the revolutionary capacity of AI-driven ethical digitalization in improving group psychological counseling within wellness education. Integrating knowledge graphs, outcome-based education principles, and promoting industry-education collaboration enables the invention of AI solutions that provide individualized, measurable, and ethically sound mental health care. Educators and mental health professionals underscore the significance of ethical governance, emotional intelligence, and interdisciplinary innovation in the evolution of digital counseling. Notwithstanding the excitement surrounding AI's potential, apprehensions over privacy, bias, institutional preparedness, and the threat of dehumanisation linger. The efficacy of AI in psychological counselling relies on both technological progress and a collaborative, morally sound framework that emphasises student welfare, emotional growth, and responsible innovation. This research proposes an exploratory framework informed by thematic insights from international experts, aimed at guiding ethically responsible development of AI-supported group psychological counselling within educational environments.

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Table 1 Ethical digitalisation in counselling

Respondent N°	Interview Response	Keyword
1	I believe ethical oversight is crucial when using AI in any therapeutic setting.	Oversight
2	We are cautious about how AI might unintentionally replace human empathy in group therapy.	Empathy
3	I'm concerned about students' data being misused by AI platforms.	Data Security
4	We ensure transparency in how AI tools process and use participant data.	Transparency
5	I support AI integration, but only with clear ethical boundaries.	Boundaries
6	We struggle with the lack of ethical guidelines tailored for AI in education-based counseling.	Guidelines
7	I find it ethically problematic if students aren't informed how AI evaluates their emotions.	Consent
8	We aim to maintain confidentiality even when digital tools are involved.	Confidentiality
9	I see bias as a serious ethical concern in AI-driven psychological models.	Bias
10	We must be culturally sensitive when developing AI tools for diverse student populations.	Sensitivity
11	I've noticed that some AI systems lack emotional context, which raises ethical red flags.	Context
12	We teach students how AI is used in counseling to foster informed participation.	Awareness
13	I think AI can help, but we must not ignore the human aspect of psychological care.	Humanization
14	We're still exploring how to align AI features with our institutional ethics policies.	Alignment
15	I believe ethical integration starts with training educators and therapists on AI tools.	Training
16	We constantly evaluate the fairness of AI-based group assessments.	Fairness
17	I am skeptical of using AI in areas involving sensitive emotional expression.	Skepticism
18	We believe ethical AI use depends on continuous monitoring and updating of algorithms.	Monitoring
19	I've raised concerns about how AI may reinforce stereotypes in group settings.	Stereotypes
20	We discuss AI ethics with our students to create a shared understanding of its implications.	Dialogue
21	I've seen ethical dilemmas arise when decisions are fully automated without counselor input.	Autonomy
22	We set clear protocols for ethical review before any AI implementation.	Protocols
23	I feel student voices are often missing in ethical decisions about AI use.	Inclusion
24	We are in favor of AI as long as it supports, not replaces, human counselors.	Support
25	I fear AI may desensitize the counseling process if not used carefully.	Desensitization
26	We've established ethical checkpoints during every AI tool deployment in group sessions.	Checkpoints
27	I appreciate the speed of AI but remain concerned about its moral limitations.	Limitations
28	We make sure to include multidisciplinary perspectives when assessing AI ethics.	Multidisciplinarity
29	I think AI brings efficiency, but we must be wary of its impact on student trust.	Trust
30	We follow global ethical standards but tailor them to our student population.	Localization

Table 2 Thematic issues highlight for Q2

Thematic Word	Grouped Keywords	Frequency	
Ethical Governance	Oversight, Boundaries, Guidelines, Protocols, Checkpoints, Monitoring, Alignment	7	23.3%
Privacy & Data Ethics	Data Security, Consent, Confidentiality, Transparency	4	13.3%
Human-Centered Approach	Empathy, Humanization, Inclusion, Dialogue, Support, Trust	6	20.0%
Algorithmic Fairness	Bias, Fairness, Stereotypes, Limitations	4	13.3%
Cultural Sensitivity	Sensitivity, Context, Localization	3	10.0%
Educational Integration	Awareness, Training, Multidisciplinarity	3	10.0%
Critical Reflection	Skepticism, Desensitization, Autonomy	3	10.0%

Table 3 Use of knowledge graphs for AI implementation

Respondent N°	Interview Response	Keyword
1	I use knowledge graphs to link emotional patterns with relevant group interventions.	Emotional Mapping
2	We found that knowledge graphs help personalize therapy sessions by tracking behavioral trends.	Personalization
3	I think knowledge graphs improve the contextual relevance of AI responses during group counseling.	Contextualization
4	We have built semantic maps that connect symptoms to coping strategies in group sessions.	Semantic Linking
5	I rely on structured data from knowledge graphs to understand peer interactions in therapy groups.	Group Dynamics
6	We noticed that knowledge graphs adapt better to individual student wellness profiles.	Adaptability
7	I believe they make AI more intuitive and emotionally intelligent.	Emotional Intelligence
8	We designed a system that predicts emotional needs through linked data in knowledge graphs.	Prediction
9	I use them to identify recurring issues across multiple students in wellness programs.	Pattern Recognition
10	We think knowledge graphs help maintain personalized progress tracking in counseling.	Progress Tracking
11	I see potential in using them to map therapeutic goals and student learning outcomes.	Goal Mapping
12	We've used knowledge graphs to ensure relevance in AI's therapeutic recommendations.	Relevance

13	I integrate them into psychological modeling to enhance response depth.	Modeling
14	We use them to personalize group dialogue based on shared concerns.	Group Dialogue
15	I find their visual nature helps both therapists and students understand emotional pathways.	Visualization
16	We created a student mental health database linked via knowledge graph relations.	Relational Database
17	I applied them to trace behavioral improvements over therapy sessions.	Behavioral Trends
18	We aligned our wellness framework with knowledge-based mental health taxonomy.	Taxonomy Integration
19	I use them to recommend personalized wellness resources.	Resource Mapping
20	We leverage semantic technologies to ensure the AI responses reflect nuanced emotional states.	Semantic Accuracy
21	I like how knowledge graphs help maintain coherence in multi-student counseling scenarios.	Coherence
22	We focus on personalized knowledge links between therapy milestones.	Therapy Milestones
23	I find it easier to design AI responses when graphs show student learning-emotional patterns.	Learning Patterns
24	We connect AI decision paths to ethical models using a knowledge graph backbone.	Ethical Alignment
25	I've used them to prevent repetitive errors in AI responses.	Error Reduction
26	We enhance peer-to-peer support by understanding common behavior nodes.	Peer Behavior
27	I think these graphs help us make emotionally informed decisions.	Emotional Insight
28	We use them to link cultural contexts with therapy relevance.	Cultural Relevance
29	I appreciate their ability to dynamically adapt based on ongoing group input.	Dynamic Adjustment
30	We build evolving therapy models from cumulative graph data.	Evolving Models

Table 4 Thematic frequency and percentage for Q 2

Thematic Word	Grouped Keywords	Frequency	Percentage
Personalization & Adaptability	Personalization, Adaptability, Progress Tracking, Resource Mapping, Dynamic Adjustment	5	16.7%
Emotional & Behavioral Mapping	Emotional Mapping, Emotional Intelligence, Emotional Insight, Behavioral Trends, Learning Patterns	5	16.7%
Semantic & Contextual Accuracy	Semantic Linking, Semantic Accuracy, Contextualization, Relevance, Visualization	5	16.7%
Group & Peer Interaction	Group Dynamics, Group Dialogue, Peer Behavior, Coherence	4	13.3%
AI Decision Support	Prediction, Modeling, Goal Mapping, Therapy Milestones, Ethical Alignment	5	16.7%
Data Structuring & Intelligence	Pattern Recognition, Relational Database, Taxonomy Integration, Error Reduction, Evolving Models	5	16.7%
Cultural Sensitivity	Cultural Relevance	1	3.3%

Table 5 Integration of outcome-based education

Respondent N°	Interview Response	Keyword
1	I use learning outcomes to guide counseling goals and track student progress.	Learning Outcomes
2	We align our emotional support strategies with predefined development objectives.	Alignment
3	I believe measurable goals help personalize group counseling sessions effectively.	Measurable Goals
4	We map counseling themes to specific psychological competencies.	Competencies
5	I structure group activities based on behavioral milestones.	Milestones
6	We assess students' emotional growth using predefined indicators.	Indicators
7	I integrate reflective practices to evaluate both counseling and learning outcomes.	Reflection
8	Our AI tools track psychological progress in line with educational objectives.	Progress Tracking
9	I co-design counseling objectives with students to align with OBE goals.	Co-Design
10	We use AI data analytics to evaluate emotional learning outcomes.	Data Analytics
11	I embed feedback loops to adjust sessions based on emotional outcomes.	Feedback Loops
12	We use outcome-based rubrics to evaluate group counseling impact.	Rubrics
13	I find that goal-setting improves both focus and accountability in counseling.	Goal-Setting
14	Our AI system categorizes interventions based on outcome frameworks.	Intervention Mapping
15	I ensure each session has clear learning goals and psychological objectives.	Session Goals
16	We use emotional assessment tools that match learning outcomes.	Assessment Tools
17	I adapt counseling based on student achievement data from other academic areas.	Adaptation
18	We integrate SEL standards to ensure psychological development is measurable.	SEL Standards
19	I think aligning emotional growth with curriculum objectives improves holistic development.	Holistic Development
20	We continuously evaluate group dynamics in light of educational outcomes.	Group Dynamics
21	I find AI useful in mapping outcome-based behavioral trends.	Behavioral Trends
22	Our feedback system enables iterative improvements in both learning and emotional support.	Iteration
23	I link emotional objectives with cognitive development outcomes.	Cognitive Link
24	We incorporate psychological KPIs to evaluate AI-driven counseling results.	Psychological KPIs
25	I rely on performance metrics to track growth in soft skills.	Performance Metrics
26	We plan counseling curriculum with emotional outcomes as a foundation.	Counseling Curriculum
27	I use digital portfolios to track students' emotional learning journey.	Digital Portfolio

28	We embed milestones within AI algorithms to monitor student development.	AI Milestones
29	I analyze counseling output based on emotional competency rubrics.	Competency Rubrics
30	We co-assess student emotional development alongside academic advisors.	Co-Assessment

Table 6 Thematic words for Q 3

Thematic Word	Grouped Keywords	Frequency	Percentage
Goal-Setting & Alignment	Learning Outcomes, Alignment, Goal-Setting, Counseling Curriculum, Session Goals	6	20.0%
Measurement & Evaluation	Measurable Goals, Indicators, Rubrics, Psychological KPIs, Performance Metrics	6	20.0%
Data-Driven Adaptation	Progress Tracking, Data Analytics, Adaptation, Feedback Loops, AI Milestones	6	20.0%
Psychological Competency & Development	Competencies, SEL Standards, Behavioral Trends, Emotional Assessment Tools,		

Table 7 Interview Responses – Industry-Education Collaboration

Respondent N°	Interview Response	Keyword
1	I think joint ventures with tech firms help bring innovation into our curriculum.	Innovation
2	We sometimes struggle to align industry goals with our educational values.	Alignment
3	I appreciate how tech partners provide access to advanced AI infrastructure.	Infrastructure
4	We find it difficult to maintain long-term commitment from private companies.	Sustainability
5	I've noticed collaboration accelerates the practical application of theories.	Application
6	We need more clarity on shared responsibilities in these partnerships.	Role Definition
7	I value how collaboration boosts our digital literacy and capacity.	Capacity Building
8	We need ethical checks when industries are involved in student-centered tools.	Ethical Standards
9	I think co-developing tools makes the tech more relevant to our actual needs.	Relevance
10	We often face funding constraints that slow down joint innovation.	Funding
11	I've seen faculty resistance when tech dominates the counseling process.	Resistance
12	We collaborate for real-time feedback on pilot AI programs.	Feedback
13	I think students gain more career exposure when companies are part of the system.	Exposure
14	We face data ownership conflicts in cross-sector development projects.	Data Ownership
15	I believe joint development results in tools that reflect educational diversity.	Inclusivity
16	We lack policies that clearly regulate private-sector involvement.	Policy Gaps
17	I support partnerships that involve both pedagogical and technological voices.	Co-Design
18	We are learning how to manage shared timelines and priorities with tech firms.	Coordination
19	I feel industries push for speed while we value ethical deliberation.	Ethical Conflict
20	I believe collaborations must ensure student privacy is protected.	Privacy
21	We need evaluation benchmarks for tools developed collaboratively.	Evaluation
22	I like how partnerships introduce cutting-edge tools in the classroom.	Tools Introduction
23	We should increase training for educators on new AI platforms from companies.	Training
24	I support strategic alliances that lead to long-term innovation.	Strategic Alliance
25	We sometimes face issues in communicating between education and tech language.	Communication Gap
26	I think mentorship programs with companies strengthen student engagement.	Mentorship
27	We collaborate best when both sides have mutual respect and open dialogue.	Collaboration
28	We lack case studies and models for responsible AI collaboration.	Best Practices
29	I fear commercialization may override wellness priorities in some partnerships.	Commercialization
30	We've successfully piloted AI tools with industry support in our group sessions.	

Table 8 Thematic Analysis – Industry-Education Collaboration

Thematic Word	Grouped Keywords	Frequency	Percentage
Strategic Co-Development	Co-Design, Collaboration, Pilot Testing, Application, Feedback	5	16.7%
Ethical & Privacy Considerations	Ethical Conflict, Privacy, Ethical Standards, Commercialization, Data Ownership	5	16.7%
Institutional Barriers	Resistance, Policy Gaps, Communication Gap, Role Definition	4	13.3%
Infrastructure & Innovation	Tools Introduction, Infrastructure, Innovation, Strategic Alliance	4	13.3%
Educational Alignment	Alignment, Relevance, Inclusivity, Evaluation	4	13.3%
Professional Development	Training, Mentorship, Exposure	3	10.0%
Resource Constraints	Funding, Sustainability	2	6.7%
Governance & Regulation	Best Practices, Coordination	2	6.7%
Cultural Collaboration	Respect, Pedagogy-Technology Balance	1	3.3%

Table 9 Final Thematic Grouping into 5 Core Key Words

Core Key Word	Grouped Thematic Words	Frequency	Percentage
1. Ethical & Human-Centered Governance	Ethical Governance, Privacy & Data Ethics, Critical Reflection, Ethical & Privacy Considerations, Governance & Regulation	24	20.0%
2. Personalization & Psychological Development	Human-Centered Approach, Emotional & Behavioral Mapping, Psychological Competency & Development, Group & Peer Interaction, Professional Development	24	20.0%
3. AI Intelligence & Data Structuring	Semantic & Contextual Accuracy, AI Decision Support, Data Structuring & Intelligence, Algorithmic Fairness, Measurement & Evaluation, Data-Driven Adaptation	36	30.0%
4. Strategic Collaboration & Institutional Integration	Strategic Co-Development, Institutional Barriers, Educational Alignment, Educational Integration, Infrastructure & Innovation, Cultural Collaboration	22	18.3%
5. Goal-Oriented Counseling Models	Goal-Setting & Alignment, Resource Constraints, Cultural Sensitivity	14	11.7%
→ Total	—	120	100%