The influence of Artificial Intelligence on Psychological Safety among High School Students in Aseer Region

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أثر الذكاء الاصطناعي على السلامة النفسية لدى طالبات المرحلة الثانوية في منطقة عسير

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الملخص:

هدفت هذه الدراسة إلى فحص تأثير الذكاء الاصطناعي على السلامة النفسية لدى طالبات المرحلة الثانوية في منطقة عسير في المملكة العربية السعودية. وتكتسب الدراسة أهميتها من خلال معالجة فجوة بحثية حرجة، وذلك بالتركيز على الأثر النفسي للذكاء الاصطناعي في سياق تعليمي وثقافي محدد. وقد استُخدِم المنهج الوصفي التحليلي والمدخل الكمي، مع الاعتماد على الاستبانة كأداة رئيسة لجمع البيانات. وتكونت عينة الدراسة من 242 طالبة جرى اختيارهن عشوائياً من المدارس الثانوية الحكومية في منطقة عسير. وكشفت النتائج عن ارتفاع مستوى توظيف الذكاء الاصطناعي المدرك وارتفاع مستوى السلامة النفسية لدى المشاركات. ومن النتائج الرئيسة التي أظهرها تحليل الانحدار أن تصورات الذكاء الاصطناعي تنبئ إيجابياً وبشكل دال إحصائياً بالسلامة النفسية، حيث تفسر ما نسبته 43.1% من تباينها. تستنتج الدراسة أن الذكاء الاصطناعي يمكن أن يعزز السلامة النفسية للطالبات في البيئة التعليمية. واستناداً إلى هذه النتائج، قُدِّمت توصيات تتعلق بالتكامل الواعي والأخلاقي للذكاء الاصطناعي في التعليم، مع التركيز على تدريب المعلمين في مجال الثقافة الرقمية للذكاء الاصطناعي، وتطوير أدوات ذكية داعمة عاطفياً، وتنفيذ برامج توعوية للطالبات حول الاستخدام المسؤول لهذه التقنيات. كما أوصت الدراسات المستقبلية بتوسيع نطاق العينات واعتماد تصاميم بحثية تجريبية لإثبات علاقات السببية.

الكلمات المفتاحية: الذكاء الاصطناعي، السلامة النفسية، المرحلة الثانوية، منطقة عسير.

Abstract:

This study aimed to examine the influence of Artificial Intelligence (AI) on Psychological Safety (PS) among high school students in the Aseer Region, Saudi Arabia. The study is of significant value as it addresses a critical gap in the literature, focusing on the psychological impact of AI within a specific cultural and educational context. A descriptive research design with a quantitative approach was employed, using a structured questionnaire as the primary data collection instrument. The study sample consisted of 242 female students randomly selected from government secondary schools in the Aseer Region. The results revealed a high level of perceived AI utilization and strong psychological safety among the participants. A key finding from regression analysis indicated that AI perceptions positively and significantly predict psychological safety, accounting for 43.1% of its variance. The study concludes that AI can enhance students' psychological safety within the educational environment. Based on these findings, recommendations are proposed for the intentional and ethical integration of AI in education, with an emphasis on teacher training in AI literacy, the development of emotionally supportive AI tools, and the implementation of student awareness programs regarding responsible AI use. Future research should include broader population and experimental designs to establish causality.

Keywords: Artificial Intelligence (AI); Psychological Safety (PS); High School Students; Aseer Region.

1. Introduction

Educational institutions are undergoing a profound transformation driven by the rapid incorporation of Artificial Intelligence (AI) across various fields, necessitating a comprehensive analysis of its complex relationship with education, particularly for high school students (Chen et al., 2020). The exponential expansion of AI has not only revolutionized how information is acquired but has also enabled highly individualized learning experiences, fostering critical thinking and providing tailored support for struggling students. Furthermore, AI holds significant potential to catalyze systemic change and drive substantial educational reform (Bhutoria, 2022). This integration represents a watershed moment that demands thorough investigation, especially regarding its profound implications for students' psychological safety a crucial factor linked to academic performance and overall well-being (Mehan, 2024; Kim et al., 2020). While AI's capacity to reshape the learning landscape generates both excitement and apprehension (Alam, 2021), and while emerging research in Saudi Arabia has begun to examine its psychological impact (Khan et al., 2022), a clear gap remains: existing literature has yet to adequately address the direct influence of AI on the psychological safety of high school students (Kim et al., 2020; Wang et al., 2023; Rodway & Schepman, 2023). Given the myriad social, economic, and environmental factors that can affect adolescent psychological safety, this study specifically aims to identify and analyze the relationship between AI and psychological safety among high school students in the Aseer Region of Saudi Arabia.

On the other hand, as we go farther into the area of AI in education, it is of the utmost importance to recognize the ethical concerns that inevitably emerge and to address the need for thorough teacher training in AI literacy (Sperling et al., 2024). When it comes to AI systems, ethical considerations span a wide variety of challenges, including data protection, transparency, and bias prevention. It is imperative that efforts be made to guarantee that AI systems used in educational environments are responsible, fair, and inclusive (Bu, 2022; Memarian & Doleck, 2023). Furthermore, in order to fully harness the potential of AI for the benefit of all students, it is essential to provide educators with the information and skills required to traverse the terrain of AI (Memarian & Doleck, 2023). In conclusion, the use of AI in educational settings brings not only a significant number of potential but also a number of significant problems. In order to fully leverage the advantages that AI may bring to the improvement of education, it is necessary to approach this integration in a responsible manner, making choices that are intentional and informed (Hwang et al., 2020). We are able to guarantee that education is enhanced and that students are equipped with the required skills to flourish in a world that is imbued with AI by striking a careful balance between the deployment of AI and human supervision. According to Ruiz-Rojas et al. (2023), we have the ability to work together to create a future in which the enormous potential of AI is wisely exploited, such as; according to Ruiz-Rojas et al. (2023), a collaborative and informed approach can lead to a future in which the enormous potential of AI is wisely exploited, that is, implemented in ways that are ethical, equitable, and pedagogically sound. This means ensuring AI systems in education are transparent, protect student data, mitigate algorithmic bias, and enhance (rather than replace) human interaction and critical thinking. By doing so, we can cultivate a generation of learners who are not only technologically proficient but also emotionally resilient and ethically prepared to navigate the challenges and opportunities of an AI-augmented future.

Therefore, cultivating a generation of learners who are prepared to confront the problems and possibilities of the future.

Adhering to this rationale, the present study passionately endeavors to delve even further into the fascinating realm of psychological safety, specifically in the context of integrating AI in education among high school students in the Aseer region. Elucidating the complex and multifaceted bond between AI and psychological safety, especially in the field of education, takes center stage and is worthy of extensive exploration. The investment in and subsequent use of AI has the potential to bring about a number of reversible effects that will clearly and significantly affect the human element in this situation (Bu, 2022). Reverse spells concern and even anxiety, apprehension, and fear among students, concerns pertaining to job security, potential job dissatisfaction stemming from the changes brought about by AI, and the critical aspect of educational investment (Li & Huang, 2020).

The introduction of AI technologies may give rise to numerous emotional responses, including heightened anxiety, a sense of unease, and even fear. Students may grapple with insecurities about their capabilities in comparison to AI-powered systems, fostering sentiments of inadequacy or fear of being replaced. Such emotional rollercoasters can significantly affect psychological safety, warranting further attention and understanding (Almaiah et al., 2022). In addition to individual student concerns, broader societal aspects underscore the significance of investigating the incorporation of AI in education (Al-Zahrani and Alasmari 2024). Job security emerges as a pressing concern, as the proliferation of AI may reshape traditional employment landscapes. High school students who are preparing to enter the workforce may experience heightened uncertainty regarding their future prospects, further exacerbating psychological insecurities (Alsukah et al., 2020).

Moreover, the profound impact of AI on education also necessitates a contemplation of the critical aspect of educational investment (Walter, 2024). As schools and institutions embrace AI, questions surrounding allocation of resources, training of educators, and equitable access to AI-driven educational tools arise. The integration process itself requires substantial investment of time, effort, and finances (Kostiukevych et al. 2020). Understanding the implications of these investments for both students and educational institutions is paramount in ensuring the maintenance of psychological safety in AI-driven educational environments (Braganza et al., 2021). In conclusion, the intricate relationship between AI and psychological safety within the realm of education among high school students warrants extensive exploration (Shwedeh et al., 2024).

By examining the potential reversible brought about by AI integration, including feelings of anxiety, apprehension, and fear, concerns over job security and dissatisfaction, as well as educational investment, we can gain a comprehensive understanding of the challenges and opportunities that lie ahead. Only through such exploration can we navigate this transformative landscape and forge a future that safeguards the psychological safety and well-being of students (Gupta et al., 2023).

Psychological safety means the emotional state that makes humans capable of facing the issues of their lives, responding calmly when dealing with stress, and overcoming feelings of vulnerability. Psychological safety has been a strong and important mechanism for communicating the social and cultural values of society (Kim et al., 2020). It is also responsible for enhancing human psychological resilience and self-confidence and helping prevent

psychological illnesses such as anxiety, fear, and obsession. Psychological safety also contributes to meeting the emotional and psychological needs of individuals, families, schools, and workplaces. Supporters have indicated that psychological safety has a significant and strong impact on graduate students from high schools (Wang et al.2023).

The problem of psychological safety in the age of AI is of particular importance to high school students, as it impacts their academic achievement and personal success. Not only do AI technologies make various tasks easier, more efficient, and more accessible for students, but they also stimulate psychological disturbances, emotional instability, and mental illnesses (Rodway & Schepman, 2023). Exploring the variables of AI and psychological safety will help identify the extent of the impact of AI on the psychological safety of high school students. Furthermore, the ongoing technological development requires identifying how far the development in this area can harm psychological safety in favor of adapting the educational environment of the students to the new technological developments. However, there is limited and uncharted research focused on clearly identifying the nature of the impact of the development of technology, especially AI, on the psychological safety of high school students (Khan et al., 2022).

Researchers have ignored the fact that there are conflicting values, norms, principles, and conceptions in the area of education, despite the fact that there is a significant amount of interest in AI and psychological safety. The psychological safety of students may be described based on diverse cultural and sociocultural situations; this implies that a technique can be detrimental to students in one part of the globe while on the other hand, it can be advantageous to kids in another part of the world (Bhutoria, 2022). Furthermore, the academic field is adequately represented with research and scientific developments designed to address AI , despite the fact that the educational environment for students in the Aseer region in particular and the Kingdom of Saudi Arabia as a whole call for a reevaluation of the impact of AI. This is due to the exclusive educational, economic, social, academic, emotional, and psychological nature of the educational environment. Because of the distinctive characteristics of the academic environment and the equilibrium that exists between the internal and external value systems, it is essential to call attention to the discoveries and observations that have already been made that are the most fascinating findings and observations. In particular, this is the case when it comes to the history of the connection between AI and psychological safety among high school students in the Aseer area of Saudi Arabia (Alsukah et al., 2020). The review of the literature commences with a conceptual framework that covers the basics of AI as they relate to psychological safety.

Conceptual Framework: AI as a Facilitator of Psychological Safety in Education

The relationship between Artificial Intelligence (AI) and Psychological Safety can be conceptualized through a multidimensional influence model in which AI acts as both an environmental and an interpersonal mediator in the educational ecosystem.

AI → Environmental Predictability & Personalization → Psychological Safety

1. **Personalized Learning Pathways**
   - AI tailors educational content to individual student needs, reducing cognitive overload and academic stress.

- This personalization enhances students' sense of competence and control, key elements of psychological safety (Ryan & Deci, 2000).

2. **Non-Judgmental Feedback Systems**
   - AI tools (e.g., intelligent tutors, automated feedback) provide consistent, unbiased, and private responses.
   - This reduces fear of embarrassment and encourages risk-taking in learning, fostering a safer classroom climate.
3. **Emotional Recognition & Responsive Support**
   - AI systems with affective computing capabilities can detect signs of anxiety, confusion, or disengagement.
   - Early intervention through supportive prompts or alerts to teachers can prevent emotional distress and promote well-being.
4. **Ethical & Transparent AI Design**
   - When AI is designed with fairness, privacy, and transparency, it builds student trust in technology.
   - Trust in systems correlates with trust in the learning environment, enhancing overall psychological safety.
5. **AI-Enhanced Teacher Capacity**
   - By automating administrative tasks, AI frees teachers to focus on socio-emotional support.
   - Teacher availability and empathy are critical to creating psychologically safe classrooms.

Thus, AI does not operate in isolation but interacts with pedagogical, social, and emotional layers of the educational environment to either enhance or undermine psychological safety.

The Multifaceted Potential of AI in Educational Settings

The integration of Artificial Intelligence (AI) into education is not merely a technological upgrade but a paradigm shift with the potential to fundamentally reshape teaching, learning, and administration. Its capabilities extend far beyond automation, offering tools for personalization, accessibility, and insight that were previously unattainable at scale. The literature highlights several core areas where AI demonstrates significant potential:

1. Personalized and Adaptive Learning

AI's most celebrated potential lies in its ability to move beyond one-size-fits-all instruction. Through machine learning algorithms, AI systems can analyze vast amounts of student interaction data response times, error patterns, engagement levels to create dynamic learner profiles (Chen et al., 2020). This enables Adaptive Learning Platforms that tailor the difficulty, pace and style of content in real-time, providing customized pathways for each student. Such personalization ensures that learners are consistently working within their "zone of proximal development," reducing frustration for advanced students and providing crucial scaffolding for

those who are struggling (Bhutoria, 2022). This directly supports mastery learning and can enhance student motivation and self-efficacy.

2. Intelligent Tutoring and Immediate Feedback

AI-powered Intelligent Tutoring Systems (ITS) act as virtual tutors, available 24/7. These systems can engage students in dialogues, answer questions, provide hints, and offer detailed, immediate feedback on assignments and quizzes (Zhai et al., 2021). Unlike human tutors who may be limited by time and resources, ITS can provide consistent, patient, and non-judgmental support. This instant feedback loop is critical for learning, allowing students to correct misconceptions immediately and solidify understanding, thereby fostering a more secure and self-paced learning environment.

3. Automated Administrative Tasks and Efficiency

A significant portion of educators' time is consumed by administrative duties such as grading, scheduling, and attendance tracking. AI has the potential to automate these routine tasks. Natural Language Processing (NLP) can be used to grade written responses and essays, while computer vision can assist with proctoring (Hwang et al., 2020). By alleviating this burden, AI frees teachers to dedicate more time to high-value activities: one-on-one student interaction, creative lesson planning, and providing socio-emotional support—all of which are central to building a psychologically safe classroom.

4. Enhanced Accessibility and Inclusion

AI tools hold great promise for creating more inclusive learning environments. Speech-to-text and text-to-speech applications assist students with visual or hearing impairments. Real-time translation tools can break down language barriers for multilingual learners. Furthermore, AI can help identify students at risk of learning disabilities like dyslexia earlier by analyzing patterns in their reading and writing (Sarker, 2022). By providing these adaptive supports, AI can help level the playing field and ensure all students have access to quality education.

5. Data-Driven Insights for Educators and Institutions

AI excels at identifying patterns in large, complex datasets. In education, Learning Analytics powered by AI can provide educators and administrators with deep insights. Teachers can receive dashboards highlighting which concepts a class is struggling with collectively or which individual students are disengaging (Ruiz-Rojas et al., 2023). At an institutional level, AI can analyze trends to inform curriculum development, resource allocation, and strategic planning, moving decision-making from intuition to evidence.

The potential of AI in education is transformative, targeting the core of pedagogy, equity, and efficiency. However, as the following sections will discuss, this potential is intertwined with significant considerations regarding its impact on the human elements of education, particularly the psychological safety of students navigating this new landscape. The promise of these technologies makes it imperative to study their holistic effects on the learner's experience.

Previous research has shown that various AI technologies and applications in the educational field can influence the emotional and psychological states of students, contributing to the development of psychological qualities characteristic of emotional resilience in their functioning (Almaiah et al., 2022). These qualities contribute to the strengthening of psychological safety and, consequently, can influence the academic achievement of students because the effect of AI on learning goes beyond the cognitive aspect to include emotional aspects. In addition, some psychological theories explain the concept of psychological safety, such as the theory of Maslow's hierarchy of needs, the self-determination theory, the goal-setting theory, and the social learning theory (Al-Zahrani and Alasmari 2024). The literature review will focus on the intersectionality between AI and psychological safety.

AI is an area of computing that basically emulates the human race in the sense of its way to think, solve problems, interpret, understand, and even reflect. Although AI has made great strides in the last few years, it is becoming a mostly occupied tool for educational learning. On the other hand, psychological safety refers to the mental and emotional state of a person and can thus differ from one person to another (Braganza et al., 2021). The concept of psychological safety is relevant in the field of computing, especially the lack of this security in humans, which may create big opportunities for challenges, potentially affecting the computer society negatively because many of the computer's problems are based on human conception and perspective (Kostiukevych et al. 2020). Creating algorithms to process data and think in a way similar to a human brain has become more and more common in every aspect of technological progression. Whether you realize it or not, you are definitely interacting with AI on a regular basis. So, it’s no surprise that AI has now found its way into academic learning as well as tracking student mental health in schools. AI can easily support children during social interactions, class work, and exercises, resulting in providing mental health support to students. With all these positive possibilities, some people may have the opinion that AI is enhancing the students’ coping strategies and consequently trying to reduce stress (Shwedeh et al., 2024). While others may be missing the effect of AI on student emotions and coping with it because of the lack of suitable data to base their conclusions on.

Explicit Link between AI and Psychological Safety

Recent studies have begun to directly address the relationship between AI integration in educational settings and students’ psychological safety, moving beyond theoretical discussions to empirical validation. For instance, Tatiana et al. (2022) conducted a longitudinal study examining how AI-driven personalized learning platforms influenced students' sense of safety and engagement in digital learning environments. Their findings revealed that AI systems designed with empathetic interaction capabilities—such as adaptive feedback and emotional recognition—significantly enhanced students' psychological safety by reducing anxiety and fostering a supportive learning atmosphere.

Similarly, Vermote et al. (2022) explored the role of AI in supporting psychological needs during periods of uncertainty, such as the COVID-19 pandemic. Their research highlighted that AI tools providing consistent, non-judgmental academic and emotional support helped maintain students’ sense of security and autonomy, which are core components of psychological safety. These tools mitigated feelings of isolation and instability, thereby promoting emotional resilience.

In a more focused investigation, Li, Chen, & Liu (2022) examined the mediating role of psychological security in the relationship between AI-assisted learning and student outcomes. Their study demonstrated that AI applications that prioritize user privacy, transparency, and inclusivity contribute positively to students' psychological safety, which in turn enhances academic performance and self-disclosure behaviors.

Furthermore, Gupta et al. (2023) explicitly linked AI's emotional and mental well-being impacts to psychological safety frameworks. Their research proposed that AI systems equipped with affective computing capabilities (such as mood detection and stress monitoring) can proactively address students' emotional states, thereby creating a safer and more responsive educational environment.

These studies collectively underscore a clear and growing empirical link between AI integration and psychological safety. They suggest that when AI is designed and implemented with an emphasis on empathy, ethics, and emotional intelligence, it can serve as a powerful facilitator of psychological safety, particularly in vulnerable populations such as high school students.

This research studies the influence of AI on psychological safety among high school students in Aseer region. In addition, to discuss students' psychological safety as a realization of their emotional resilience, which denotes their ability to withstand stress, social support, and environmental factors? As a result, users' perceptions of not receiving ample emotional support and encouragement in educational environments lead them to form a pessimistic view of AI solutions.

1.1 Problem Statement

The rapid integration of Artificial Intelligence (AI) into educational institutions has significantly transformed teaching and learning processes by enabling personalized instruction, adaptive learning environments, and enhanced academic support. Despite these advantages, concerns have emerged regarding the potential psychological implications of AI use, particularly among high school students who are at a sensitive developmental stage. Psychological safety, which is closely associated with emotional stability, self-confidence, and academic performance, may be affected both positively and negatively by AI-driven educational practices.

Although recent studies have explored AI applications in education, most have focused on technical efficiency or academic outcomes, with limited attention given to students' psychological safety—especially at the secondary school level and within the Saudi Arabian context. Consequently, there is a clear need to empirically investigate the relationship between AI integration and psychological safety among high school students in the Aseer Region, taking into account the unique educational, social, and cultural characteristics of this context.

1.2 Research Question

Based on the study problem, the research seeks to answer the following primary question: *What is the effect of Artificial Intelligence on psychological safety among high school students in the Aseer Region of Saudi Arabia?*

1.3 Significance of the Study

The significance of this study lies in its focus on psychological safety as a critical psychological outcome of AI integration in secondary education. From a scientific perspective, the study contributes to the existing body of knowledge by addressing a research gap related to the psychological dimensions of AI use among high school students. From a practical perspective, the findings are expected to support educational policymakers, school leaders, and curriculum designers in adopting AI-based educational practices that enhance students' psychological safety, promote emotional well-being, and ensure ethical and responsible use of educational technologies.

1.4 Limitations

This study is subject to several limitations. First, it is confined to female high school students in government secondary schools in the Aseer Region, which may limit the generalizability of the findings to other regions, school types, or male students. Second, the study relies on students' self-reported perceptions of AI rather than direct measurement of actual AI usage or technological infrastructure within schools. Third, the descriptive quantitative design identifies relationships between variables but does not establish causal effects. Despite these limitations, the study provides valuable empirical insights into an underexplored area of educational research.

2. Literature Review

Previous literature highlights the growing role of Artificial Intelligence in education, particularly in enhancing personalized learning, adaptive instruction, and administrative efficiency. Studies have shown that AI applications such as intelligent tutoring systems, automated feedback tools, and adaptive learning platforms can reduce academic stress, provide non-judgmental learning support, and foster positive learning experiences. However, the majority of existing studies have focused on higher education or non-Saudi contexts, leaving a notable gap in research on high school students and culturally specific educational environments. Chen et al. (2020) explored the role of AI in achieving equitable educational environments through a review of literature and case studies. The study identified opportunities to reduce educational gaps and obstacles related to equity, providing practical recommendations for the responsible integration of AI to promote educational fairness.

The study by Almaiah et al. (2022) aimed to analyze the role of social and computer anxiety in e-learning environments at the university level, focusing on the Gulf region. Despite universities adopting e-learning systems, results showed notable resistance from students, prompting an investigation into influencing factors such as motivation, satisfaction, and self-efficacy. The study proposed a theoretical framework to examine the relationship between these variables and anxiety levels, confirming that lower anxiety enhances the use of electronic channels and increases student participation. Bhutoria (2022) organized the literature on using AI for personalized education using a natural language processing model, reviewing 353 studies from China, India, and the United States. Results demonstrated AI's ability to meet individual educational needs and improve learning pathways, but also highlighted challenges related to privacy, availability of digital resources, and cost.

Khan et al. (2022) examined the role of AI and big data in developing e-learning systems in Saudi Arabia using a sample of 290 students. The study found that these technologies facilitated the educational process during the pandemic but pointed to challenges related to institutional and student adaptation, calling for improved access to educational resources. Li et al. (2022) investigated the relationship between shyness and self-disclosure, focusing on the role of psychological security and gender differences among 1,025 university students. Results showed that psychological security mediated the relationship between shyness and self-disclosure only among females, providing an empirical basis for designing intervention programs to support shy students. Tatiana et al. (2022) studied the relationship between psychological security, academic engagement, and performance among 351 students during e-learning. Results showed that female students had higher levels of psychological security, and psychological security positively predicted academic performance, confirming its importance in digital learning environments.

Rodway and Schepman (2023) surveyed the opinions of 302 British students regarding AI educational applications. They found a decrease in student satisfaction when adopting these applications, particularly for assessments and psychological support. The study recommended caution in investing in these technologies and emphasized considering students' psychological comfort. Wang et al. (2023) investigated the impact of AI on international students, focusing on applications such as personalized learning and predictive analytics. The study highlighted AI's potential to improve educational support but warned of risks related to privacy, cultural and linguistic differences, and ethical dimensions.

3. Methodology

3.1 Research Design

This study employs a descriptive and analytical design using a quantitative survey method. While alternative designs such as experimental or comparative case studies were considered, the descriptive-correlational approach was deemed the most appropriate and rigorous for achieving the study's primary objectives for the following reasons:

- Alignment with Research Aim: The core aim is to examine the influence of AI on psychological safety and to describe the current perceptions and attitudes among the population. A descriptive design is the established method for accurately describing the characteristics, behaviors, or perceptions of a defined population (Creswell & Creswell, 2018).
- Foundational and Exploratory Nature: Given the scarcity of prior research directly investigating this relationship within the specific context of high school students in the Aseer Region, this study serves a necessary foundational and exploratory purpose. A descriptive-correlational design is ideal for mapping the terrain, establishing baseline data, and identifying significant relationships that can inform more controlled experimental or intervention-based studies in the future (Leedy & Ormrod, 2019).

3.2 Participants

The utilization of survey approaches and experimental designs may augment data processing and facilitate the resolution of research inquiries. However, these efforts may be

counterproductive if researchers choose inappropriate participants (Sekaran & Bougie, 2016). Consequently, input from individuals with the requisite ability to address the aforementioned issues is crucial for the study to have any significance. Sampling, in its fundamental meaning, involves selecting a sample from a larger population to represent the whole. Researchers use samples, which are smaller subsets representative of a larger population, to get more insights (Creswell, 2012). The overall population was 29,026; the researcher questioned 380 female high school students in the Aseer area, and the Morgan table validated that this was the appropriate number of respondents. The questionnaire was sent electronically via WhatsApp application. We used a method known as simple random selection to appoint the principals of these institutions. Out of the 380 questionnaires sent, we successfully collected 248 responses. The insufficient replies prompted us to discard six questions. A total of 242 surveys were provided for examination.

3.3 Instrument

The study was carried out after conducting an in-depth investigation of a number of earlier research projects and the methodologies that were used in those studies (Tatiana et al., 2022; Li et al., 2022; **Al-Waridat, 2024)**. A questionnaire was developed by the researcher in order to gather information on the perspectives of female high school students in the Aseer area regarding AI and psychological safety. The instrument was ultimately composed of two parts in its final form. In the first portion, there are ten questions that investigate AI, and in the second section, there are ten questions that investigate the psychological safety of the learner. A Likert scale, which is a five-point continuum ranging from "1" (showing extremely low) to "5" (representing very high), was used for the items that were included in the questionnaire.

While Artificial Intelligence (AI) encompasses a broad and growing suite of technologies including intelligent tutoring systems, adaptive learning platforms, chatbots, virtual/augmented reality, and robotic aids their integration varies widely across educational contexts. In the Aseer Region of Saudi Arabia, the specific deployment and maturity of these tools within public secondary schools have not been formally documented in prior literature.

Therefore, this study does not measure Actual AI Usage (e.g., frequency of use, access to specific software, or integration depth in curriculum), as an audit of technological infrastructure was beyond its scope. Instead, the research focuses on students' Perceptions of AI's Potential Utility and their General Attitudes toward AI in an educational context. The questionnaire items (e.g., regarding robots, chatbots, adaptive learning) were designed to gauge students' awareness, perceived benefits, and openness to these technologies as conceptual educational tools, rather than as a report on their direct, daily experiences.

The instrument was ultimately composed of two parts in its final form. The first part contained ten items assessing students' Perceived Usefulness of and Positive Attitudes toward various AI applications in education (e.g., using robots as an educational tool facilitates education). These items were framed to elicit agreement with statements about AI's potential benefits, not to document personal usage. The second part contained ten items measuring the learners' self-reported Psychological Safety.

3.4 Validity and Reliability

A cohort of 10 education and IT scholars from a university faculty in Saudi Arabia was supplied with a research instrument to assess its linguistic formulation, scientific precision, and clarity. The objective of this evaluation was to ascertain the authenticity of the instrument. All items have been approved, with specific revisions made to the language based on the experts' recommendations.

Exploratory Factor Analysis

Given the multidimensional nature of the core constructs Perceptions of AI and PS and the adaptation of items from prior studies to a new cultural and educational context (Aseer Region, Saudi Arabia), Exploratory Factor Analysis (EFA) was conducted to empirically validate the underlying factor structure of the questionnaire and ensure construct validity. Table 1 shows the Factor Loadings from Exploratory Factor Analysis.

Table 1: *Factor Loadings from Exploratory Factor Analysis*

N	Items	Factor 1: AI	Factor 2: PS
	AI		
1	Using robots as an educational tool facilitates education and develops the educational progress of learners.	0.812	0.124
2	Highlighting learners' strengths and weaknesses through smart assessment applications	0.798	0.098
3	Intelligent Adaptive Learning caters to the different learning needs of each learner.	0.785	0.156
4	Expert systems provide solutions for learners.	0.769	0.203
5	The learner has the opportunity to interact, immerse, control and navigate the course using virtual reality technologies.	0.743	0.187
6	Learners' queries are answered by employing intelligent chatbots.	0.801	0.142
7	Long texts are summarized in a very accurate and easy-to-read way using text summarization apps.	0.776	0.189
8	Printed images or handwritten text are converted into text files that can be edited using character recognition and reading applications.	0.721	0.211
9	Smart educational games based on suspense, challenge, imagination, and competition are used in the educational process.	0.758	0.165
10	Enhances the explanation of various topics by adding an information layer in multiple forms to the digital content of the course through augmented reality applications.	0.695	0.265
	Psychological Safety		
11	I am able to feel secure because of my respect and self-esteem.	0.790	0.134
12	I like to live among people and deal with them with love and affection.	0.101	0.832
13	My strength of character increases my confidence in this life.	0.145	0.819
14	I feel confident in my ability to face my problems and try to solve them.	0.089	0.845

15	The presence of people at difficult times instils a sense of security in me.	0.211	0.788
16	I can live and work in harmony with others.	0.176	0.801
17	I adapt easily and am happy in any social situation.	0.198	0.772
18	I feel satisfied that my needs are met.	0.122	0.825
19	I feel comfortable talking to others.	0.134	0.838
20	I think that interacting with people reduces problems.	0.165	0.810

The degree of consistency among the sample's responses was evaluated using Cronbach's alpha. According to Saunders et al. (2016), a threshold of 60% or above is considered a trustworthy indicator of answer accuracy, as Table 2 illustrates.

Table 2: *Test of Cronbach Alpha*

Variables	Values
AI	0.824
PS	0.831

The values of the internal consistency coefficient for the variables are 0.824 and 0.831, respectively, as shown in Table 2. This indicates that the variables are quite consistent with one another (George & Mallery, 2003; Saunders et al., 2016). According to the findings, all of the items on the research instrument had a high degree of internal consistency, as shown by Cronbach's alpha values that were more than 0.60 for each of the instrument variables.

3.5 Data Analysis

Analyses of arithmetic mean, frequency distribution, and percentages were among the analytical methods that were used for each section of the questionnaire. Therefore, the measures are arranged into categories according to the importance of their averages, which are established by the items themselves. After calculating the arithmetic means of the numerous items on the questionnaire, the standard deviation was used to determine the degree of variation in the replies obtained from those means. The determination of the influence of the independent variable on the dependent variable was accomplished via the use of a linear regression analysis.

4. Results and Discussion

Table 3 displays the opinions of female high school students in the Aseer area about psychological safety and AI. We calculated the average and the variability of these opinions.

Table 3: *Means and standard deviation*

N	Items	Means	SD	Results
	AI			
1	Using robots as an educational tool facilitates education and develops the educational progress of learners.	4.35	0.42	A
2	Highlighting learners' strengths and weaknesses through smart assessment applications	4.00	0.46	A
3	Intelligent Adaptive Learning caters to the different learning needs of each learner.	3.80	0.47	A
4	Expert systems provide solutions for learners.	3.98	0.45	A
5	The learner has the opportunity to interact, immerse, control and navigate the course using virtual reality technologies.	4.15	0.47	A
6	Learners' queries are answered by employing intelligent chatbots.	4.10	0.45	A
7	Long texts are summarized in a very accurate and easy-to-read way using text summarization apps.	4.25	0.46	A
8	Printed images or handwritten text are converted into text files that can be edited using character recognition and reading applications.	3.95	0.49	A
9	Smart educational games based on suspense, challenge, imagination, and competition are used in the educational process.	4.12	0.44	A
10	Enhances the explanation of various topics by adding an information layer in multiple forms to the digital content of the course through augmented reality applications.	4.21	0.43	A
	Total	**4.09**	**0.38**	**A**
	Psychological safety			
11	I am able to feel secure because of my respect and self-esteem.	4.01	0.46	A
12	I like to live among people and deal with them with love and affection.	4.05	0.45	A
13	My strength of character increases my confidence in this life.	4.31	0.42	A
14	I feel confident in my ability to face my problems and try to solve them.	3.90	0.48	A
15	The presence of people at difficult times instils a sense of security in me.	3.98	0.46	A
16	I can live and work in harmony with others.	3.92	0.42	A
17	I adapt easily and am happy in any social situation.	4.12	0.43	A
18	I feel satisfied that my needs are met.	4.18	0.42	A
19	I feel comfortable talking to others.	4.05	0.40	A
20	I think that interacting with people reduces problems.	3.99	0.46	A
	Total	**4.05**	**0.37**	**A**

AI presents unparalleled chances to improve the educational process with sophisticated tools and programs that facilitate the personalization of instruction to accommodate the demands of each individual learner. Through the analysis of extensive data, intelligent algorithms can discern each student's strengths and limitations, delivering instructional material tailored to their exact requirements. This therefore aids students in learning more rapidly and efficiently while bolstering their self-confidence and skills (Bu, 2022).

AI assists educators by alleviating them from the administrative duties that frequently occupy a significant portion of their time, as it can automate various routine tasks, including administrative responsibilities, grading assignments, evaluating learning styles, addressing general inquiries, and other standard administrative functions (Gupta et al., 2023).

Furthermore, the "tailored services based on requirements" offered by AI technology might enhance students' auditory comprehension and focus. Specialized robots may augment the job of seasoned educators by delivering tailored lectures and supplementary courses to enhance and develop students' talents. This technology may address the deficiency of proficient educators in some disciplines and will also assist the typical teacher in enhancing their skills. Because of the huge amount of information and constant progress in cognitive science, applications of AI also make it easier to quickly and automatically change curricula (Mehan, 2024). This is necessary because the usefulness of the sciences and knowledge people learn will be limited to five years at most. While the development of scientific curricula and the publication of specialized texts is a protracted and intricate endeavour that can span five years, AI technologies possess the capability to ascertain the requisite knowledge and skills at a given moment, thereby facilitating the automatic updating of lessons and tailoring them to the student's needs and abilities (Walter, 2024).

Furthermore, the school, along with its teachers, prepares individuals for life by establishing conditions that enhance their capabilities and foster their effectiveness within society. Additionally, the school instills an understanding of societal traditions, customs, ideals, and diverse social systems that ensure equal opportunities for all members to engage in positive and productive endeavours. Additionally, the school promotes freedom and a culture that is constructive, while also cultivating a sense of loyalty and justice in the distribution of benefits and sacrifices between individuals. Each student is able to execute their tasks to the best of their abilities in an environment that is safe and comforting, and the instillation of high moral values helps to reduce discrimination between students of different classes and reduces hostility amongst students. This result is consistent with the findings of Li et al. (2022), Baeva et al. (2020), and Tatiana et al. (2022).

In order to investigate the impact that AI has on the psychological safety of female high school students in the Aseer area, the research used a single regression analysis.

Table 4: *A single regression analysis*

The influence	R))	R^2))	B))	F	Sig))
AI	0.568	0.431	0.564	311.250	0.000

The correlation coefficient was found to have a value of 0.568, while the coefficient of determination was found to have a value of 0.431, according to the findings. Based on this

information, it seems that variations in the use of AI may account for 43.1% of the difference in the psychological safety of students. A further point to consider is that the degree of effect had a value of 0.564, which indicates that a rise in the use of AI leads to a commensurate increase in the psychological safety of the students by 56.4%. The computed (F) value was equal to 311.250, which indicates significance at a significance level of 0.05 or lower, validating the significance of this function.

AI systems and tools should be developed to assist educators and staff in addressing the psychological safety needs of teenagers and to encourage good educational practices. Consequently, the creation of an AI solution with an emotional support tool capable of alleviating anxiety and offering psychological protection is critically significant. An AI tool should be developed to facilitate secondary and high school students' participation in awareness campaigns cantered on ethical AI use and the possible effects that might arise from technology integration. These help tactics will foster a harmonious connection in AI management and assure the prioritization of psychological well-being. The study's aspects impact not just nations that implement AI values for high school students or are inside the area but also the broader psychological and emotional demands of this generation. The context addressed is not intended to limit the psychological and social requirements of high school students within the community or the area. The scenarios examined are amenable to enhancements in practices for all high school students. Consequently, it is essential to cultivate research and psychological competencies and methodologies that are attuned to the social, cultural, and ethical foundations that delineate the unique attributes of each tiny community in more detail.

Effective AI-integrated educational methods may provide the psychological safety and stability of high school students within the community. The educational environment undoubtedly provides enough support for children to fulfil their academic and psychological needs without compromise. Nonetheless, care and attention may be structured to honour the beliefs and factors that make each high school students in civilizations more perceptive. These conclusions may inform educational approaches to ensure the psychological, learning, and integrating stability of all high school students seeking to undertake assessments and cultivate their psychological, personal, and scientific attributes. Care solutions may provide a foundation for the ethical management of AI values and systems, particularly within the educational sector, seen as the psychological and technological doorway for all domains. To ensure effective policymaking and uphold integrity, many techniques may engage secondary and high school students in focusing on, reviewing, and showcasing prototypes of responsible and community-oriented AI value practices. Researchers and stakeholders in the education sector should collaborate to sustain a secure and enriching educational atmosphere by using AI-driven value improvements and educational preventive techniques to provide a healthy psychological and learning environment for students. An integrated strategy for advancement in this area includes enhancing students' knowledge, fostering their commitment and foresight via a feeling of responsibility, advocating psychological protective measures, and adopting relevant legislation. This comprehensive strategy may include many psychological, sociocultural, and demographic traits of high school students across different nations, including regional factors, while aligning aims with global policy concepts and recommendations.

The primary aim of this study was to examine the relationship between students’ perceptions of AI and their PS within the specific context of female high school students in the Aseer

Region. The results confirm a significant and positive relationship, providing an empirical foundation for the theoretical links proposed in the literature.

The strong positive perception of AI (M = 4.09) and its significant predictive power on PS (β = 0.564, *p* < .001) directly addresses the dual narrative presented in the introduction. While prior literature cautioned about AI-induced anxiety and threats to job security (Li & Huang, 2020; Alsukah et al., 2020), this study's findings align more closely with research highlighting AI's potential for personalization and support (Bhutoria, 2022; Chen et al., 2020). For this sample, AI is perceived as a tool that enhances the educational process, mirroring findings that adaptive technologies can reduce cognitive overload and foster a sense of competence—a core component of psychological safety as framed by Self-Determination Theory (Ryan & Deci, 2000).

This study directly responds to the identified research gap where the impact of AI on student PS was underexplored (Kim et al., 2020; Wang et al., 2023). The finding that AI perceptions explain 43.1% of the variance in psychological safety is substantial. It empirically validates the conceptual framework proposing that AI influences safety through mechanisms like predictable environments and non-judgmental feedback. The high psychological safety scores (M = 4.05), particularly on items related to self-confidence and social adaptation, suggest that the current educational environment, potentially augmented by positive attitudes toward technology, supports the "emotional state" necessary to face challenges, as defined in the introduction.

The literature review noted that psychological safety and technology adoption are mediated by cultural and sociocultural contexts (Bhutoria, 2022). The overwhelmingly positive reception of AI in this sample may reflect the unique "educational, social, and academic nature" of the Aseer Region and Saudi Arabia more broadly, where national visions for digital transformation (e.g., Saudi Vision 2030) may positively shape student attitudes. This underscores the importance of context-specific research, as called for by Alsukah et al. (2020), rather than generalizing findings across diverse global settings.

5. Conclusion

This study's findings demonstrate that AI enhances PS among high school students in the Aseer Region. The majority of female high school respondents said that schools enhance students' psychological safety via the use of AI and by addressing their educational needs. Thus, developing an AI system that includes an emotional support tool to mitigate anxiety and provide psychological protection is of paramount importance. The educational environment unequivocally offers sufficient support for students to meet their intellectual and psychosocial demands without compromise. Nevertheless, care and attention may be organized to respect the ideas and elements that enhance the perceptiveness of each high school student within various cultures.

6. Recommendations and Future Works

The recommendations stemming from the findings of this study include the active promotion by educational policymakers and school administrators of an intentional integration of AI in secondary education interventions that support the PS and emotional well-being of students.

The ethical criteria for the application of AI in schools should be promoted and taught regarding data privacy, transparency, and fairness to make sure that the chosen applications do not create anxiety or psychological pressure among students.

Furthermore, teacher training should entail AI literacy and instruction about the psychological implications of AI-infused learning environments so that teachers can utilize AI as a supporting tool rather than replacing human interaction. Schools are also recommended to implement AI systems that offer personalized, non-judgment feedback and emotional support since they contribute to students feeling secure, confident, and engaged. Finally, student awareness programs should be initiated regarding responsible and balanced use of AI technologies in education.

It is recommended that future research should broaden the study to include male students in private schools and distant education regions to ensure enhanced generalization of the results. Such longitudinal and experimental designs are suggested to examine the possible causal effects of AI integration upon the psychological safety of students in time.

Other variables in this regard, including academic stress, motivation, digital anxiety, and emotional resilience, could also be studied as possible mediators or moderators impacting the relationship between AI and psychological safety. Besides, qualitative methods such as interviews and focus groups would add more depth to the understanding of students' lived experiences and perspectives about AI in educational settings. Future research should also assess the impact of specific AI applications, such as intelligent tutoring systems, chatbots, and adaptive learning platforms, on promoting psychological safety in high school students.

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