

Understanding the Influence of Locus of Control on Emotional Apathy Among Individuals Using ChatGPT for Educational Purposes

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Abstract: With the rapid integration of artificial intelligence into higher education, understanding its psychological implications for students has become increasingly urgent. This study examined the influence of locus of control and ChatGPT usage on emotional apathy among 170 individuals (aged 18 and above) using a correlational research design. Data were collected using Rotter's Locus of Control Scale, the Apathy Evaluation Scale, and a ChatGPT Usage in Education Scale, and analysed via Pearson correlation, independent samples t-test, and multiple linear regression. Results revealed a significant negative correlation between ChatGPT usage and emotional apathy ($r = -.315, p < .01$), with ChatGPT usage emerging as a significant predictor of lower apathy ($\beta = -.318, p < .001$). Contrary to expectation, locus of control did not significantly predict emotional apathy. These findings challenge prevailing assumptions about AI-driven academic disengagement and suggest that purposeful ChatGPT use may promote emotional engagement in educational contexts. Implications for educators, institutions, and AI policy in higher education are discussed.

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I. INTRODUCTION

The fast adoption of artificial intelligence (AI) applications in the education sector of higher learning institutions has completely transformed the academic learning environment. ChatGPT is one of the most radical of these technologies and a large language model created by OpenAI, which has gained unexpectedly widespread use among students in universities around the world. ChatGPT, launched publicly in November 2022, is one of the most popular educational applications based on AI technology, which provides students with access to explanations, essay support, problem-solving support, and personalized study advice immediately after its publication. This technological change poses serious psychological issues of how AI-supported learning interplays with the basic cognitive and motivational abilities of learners, especially those associated with the sense of personal agency, self-regulation, and emotional involvement in the academic activity. A single psychological phenomenon of increasing interest in educational terms is emotional apathy, a condition of demotivation, diminished emotional sensitivity, and absence of initiative or concern in significant involvement in academic work (Marin, 1996). Emotional indifference among students is not just another form of mere indifference or indifference but an affective withdrawal that may disrupt the learning process, academic persistence and general state of mind. The apathy rates among undergraduate populations have been observed to be ever-growing, but the shocks of the COVID-

19 pandemic have only intensified this tendency, and the resultant normalization of passive and screen-mediated learning settings has further sparked its expansion (Bures et al., 2021). Awareness of the psychological antecedents and correlates of emotional apathy is thus of paramount significance to educators, counsellors and policymakers who aim at providing a real academic engagement. One of the basic personality and educational psychology constructs that could help explain the differences in student emotional apathy is Locus of Control (LOC) a concept initially developed by Julian B. Rotter (1966). Locus of control is an overall belief of an individual regarding the degree of control that they have over the consequences of things in their lives. Those who have an internal locus of control assume that their actions, effort and choices are the main factors that define what occurs to them. On the other hand, persons with an external locus of control explain the consequences as the effect of external factors like luck, fate or the impact of other people. This difference carries far reaching consequences to academic behaviour: internally oriented students will be more prone to self-regulated learning, will not give up in the presence of difficulties and will feel a sense of personal ownership of their academic performance (Cassidy and Eachus, 2000). On the other hand, externally oriented students can be more vulnerable to the conditions of disengagement, helplessness, and emotional detachment of their studies that can be closely related to the phenomenology of emotional apathy. The locus of control intersects with the application of AI tools like ChatGPT to academic activities, which is a new and

theoretically deep subject to be studied. One of the hypotheses that are likely to be the most interesting to examine is the possibility that students who have an external locus of control can be more inclined to outsource the cognitive and emotional labour to an AI system, thus lessening the sense of agency in academics and increasing emotional indifference. On the other hand, students who have an internal locus of control can employ ChatGPT instrumentally, as something to supplement their individual efforts and not compensate personal effort. Nevertheless, the correlation between the use of AI and the apathy of emotions is not wholly negative. Other scholars have argued that academic frustration, learning material accessibility, and a sense of competence can be the results of an effective use of AI tools, which may relieve instead of worsen apathy (Zawacki-Richter et al., 2019). Even the direction and strength of this relation are empirically vague, which explains the necessity of methodological research. There has been a lot of academic discussion regarding the implementation of ChatGPT in education. Supporters believe that AI tools level the playing field on quality academic assistance, especially toward those learners who are not provided with tutors or who do not easily follow conventional pedagogical delivery (Kasneji et al., 2023). Nevertheless, critics have researched the effects of excessive dependence on artificial intelligence (AI) in education and the adverse effects it has had on student learning with respect to the tempering influences of ethical issues and institutional policies. The risks of critical thinking and engagement may be observed as student reliance on the AI tools is increasing. There is still nascent empirical research on this field whose findings have been contradictory. There are studies provided that AI-supported learning systems promote student motivation and self-efficacy and those that report higher passivity and low persistence in students who rely on AI to complete academic assignments (Baidoo-Anu and Ansah, 2023). The missing element in the literature is a strict study of the psychological processes including locus of control, which can mediate these effects. The current research is founded on Social Learning Theory (Rotter, 1954), as it assumes that behaviour is a result of expectancy the extent to which a particular individual thinks that a particular behaviour will result in a certain reinforcement and the perceived worthiness of such reinforcement. The main construct of this framework is Locus of control which is a generalized expectancy construct. Applying to the educational application of AI, the Social Learning Theory can predict that the perceived control among students will determine how they will interact with AI tools and, consequently, how the latter will impact their affective states. Another theoretical framework that can be applied to this study is the Self-Determination Theory (SDT) of Deci and Ryan (1985) which highlights that psychological well-being and motivation depends on the fulfilment of three fundamental psychological needs that, are; autonomy, competence, and relatedness. The state of chronic frustration of these needs may result in emotional apathy a condition that may be increased by passive consumption of the AI-generated academic material. Although both locus of control and the use of AI tools theoretically are relevant to the phenomenon of student emotional apathy, empirical studies that combine these two variables have been studied very little. Available

research on AI and student well-being is also inclined to capture the effects of AI on academic performance, plagiarism, or other positive or negative attitudes to AI, instead of the affective or motivational responses like apathy. In a similar way, the locus of control research concerning education facilities has not yet explored the particular scenario of the AI-mediated educational context. This paper will fill this gap by analyzing, using an undergraduate sample, how locus of control and the use of ChatGPT in the study of education can be related to and predictive of emotional apathy.

Although both locus of control and use of AI tools are theoretically applicable to the phenomenon under study (student emotional apathy), virtually no empirical studies have looked at both variables together. Current research on AI and student well-being will emphasize the effects, which are typically academic achievements, plagiarism or overall attitudes towards AI, instead of the affective or motivational ones, including apathy. Likewise, the study of locus of control in the educational context has not been exploring the context of AI-mediated learning environments. This paper will fill this gap by analyzing the framework of a sample of individuals who use ChatGPT for educational purposes, the degree to which locus of control and the use of ChatGPT in educational activities are related and predictive of emotional apathy. By so doing, it is part of the new interdisciplinary conversation between educational psychology and AI education research. The use of ChatGPT by professionals in the educational setting presents an especially relevant setting to research the topic. With the rise in the penetration of smartphones and the internet, AI tools have become more accessible to undergraduate students around the nation despite infrastructural and socioeconomic inequity. In this respect, the inclusion of AI tools like ChatGPT as a source of alleviating academic pressure makes sense. Nonetheless, the mental outcomes of such dependency such as the possible impact on the emotional involvement into learning should be closely subjected to empirical evaluation. The current research will have four main goals: (1) to research the connection between locus of control and emotional apathy in the group of undergraduate students who use ChatGPT as an educational tool; (2) to test the connection between the frequency and nature of ChatGPT use in education and emotional apathy levels; (3) to identify whether students with an internal locus of control report lower levels of emotional apathy compared to students with an external locus of control; and (4) to estimate whether locus of control and the use of ChatGPT have a significant mutual predictive value. In these regards, the hypotheses were set as follows:

- H1: The locus of control will be significantly related to emotional apathy among the undergraduate students.
- H2: The use of ChatGPT in education will have a significant correlation with the emotional apathy in undergraduate students.
- H3: Students who possess an internal locus of control will have less emotional apathy as compared to those students who possess an external locus of control.

- H4: The greater the use of ChatGPT in education, the greater its use will be linked to lower level of emotional apathy among individuals.

In order to test the hypotheses, the quantitative cross-sectional research design was adopted. The random convenience sampling was done in the universities to recruit a sample of 170 undergraduate students. The following standardized psychological measures were used to collect the data: the Locus of Control Scale (1966) by Rotter, an instrument that is well validated to measure generalized control beliefs; the ChatGPT Usage in Education Scale which measures the frequency and the academic context of using AI tools; and the Apathy Evaluation Scale (AES; Marin, 1991) which gives a reliable measure of the emotional apathy in the cognitive, behavioural and emotional areas. The SPSS software was used to perform the statistical analysis and included correlation analysis, independent samples t-tests, and multiple regression to systematically answer each hypothesis. The importance of the study is seen in the timely and everlasting input to the field of intersection between educational psychology and AI-assisted learning. Since the topic of AI policy, student mental health, and academic integrity continues to vex and perplex even the most reputable universities, it is both conceptually and practically significant to have a theoretical and practical grasp of the psychological profile of students who utilize the tools of AI, and the impact that the latter has on their affective state. The results of this study could be used to design AI literacy courses, counselling interventions to address the poor performance of students in academic settings, and to engage in evidence-based policy debates regarding the role of the AI in higher education. On a larger scale, the research contributes to the development of the field of psychology by positioning the novel phenomenon of AI-assisted learning in the context of the existing motivation and personality theories. The balance of this dissertation is structured in the following way. Chapter 2 is a thorough literature review of the pertinent sources on locus of control, emotional apathy, and application of AI tools in the educational environment leading to the theoretical conceptualization on which the study is based. Chapter 3 explains the methodology, such as sampling strategy, data collection instrument, data collection procedure, and data analysis strategy. Chapter 4 contains the findings of the statistical analyses, and Chapter 5 explains those findings appealing to the existing theory and empirical evidence, outlines the limitations of the study, and provides some recommendations on the future research and practice.

II. REVIEW OF LITERATURE

Julian Rotter (1966) added Locus of Control (LOC) to the generalized expectancy of whether the consequences of actions depend on the behaviour of an individual (internal) or are the result of chance, fate or strong individuals (external). Modern longitudinal research using construct-valid measures consistent with the definition provided by Rotter indicates that LOC has been found to be relatively stable over time, especially in adults. Studies also suggest that, prenatal parental externality anticipates worse academic, social and emotional results in children, but changes in favour of

internality are linked to enhanced adjustment. Essentially, internal LOC is also a protective measure against depression, behavioural issues and feelings of helplessness which has made it important in terms of development and intervention.

Susan Lowes and Pei Lin (2015) studied the Locus of Control (LOC) among about 600 online high school students with the use of Rotter Locus of Control questionnaire. The research was done to facilitate self-directed learning and to see the students who were at risk of achieving low academic success in online settings. The results showed that in general, LOC scores could not be used as predictors unless the differences in genders were taken into account. Factor analysis showed that there were unique patterns of response of male and female students with certain factors highly correlated with final grades. Online learning showed more student reflections with regard to being aware of self-regulation. The authors concluded that LOC could be used as a diagnostic and developmental instrument to improve online academic performance.

N. B. Serin, O. Serin and F. S. Sahin (2010) examined demographic variables that had impact on locus of control among university students. The research found out that there was a great gender gap and the male students exhibited more internal control compared to female students. The socioeconomic status came out as a strong predictor as well with students whose backgrounds were higher incomes registering higher internality. Moreover, students who lived with their families had a high internal locus of control as compared to students who lived in dormitories or own houses. Another factor that impacted was family structure where the students with four or more siblings were found to be more internally oriented. The results show the influence of socio-demographic factors on locus of control orientations.

Madhu Jain and Suyesha Singh (2015) investigated the connection between Locus of Control (LOC), mental health, and overall adjustment in adolescent females. This was done on 50 participants and was done using Rotters Locus of Control Scale (1966), the Mental Health Battery (Singh and Gupta, 2000) and Adjustment Inventory on College students (Sinha and Singh, 1995). The results showed that teenagers with an internal LOC were found to have much better mental health and more successful adjustment in all aspects of home, social, emotional, educational and health as compared to the adolescents who had an external LOC. The research highlights the psychological self-defensive benefits of internality in the teenage years.

Yuen-Siang Ang et al. (2018) studied the multidimensionality of the concept of apathy in patients with Parkinson disease. The study examined behavioural, social, emotional aspects of apathy and its relationship with depression and anhedonia using Apathy Motivation Index. Results showed that behavioural and social apathy was greatly high in Parkinson patients but emotional motivation was relatively intact. Further on, depression and anhedonia had a positive correlation with behavioural and social apathy, but not emotional one. The analysis points out that apathy is

not unitary and it has different dimensions with varying psychological correlates and clinical implication.

Stephanie West (2024) explored the levels of student apathy, engagement, and academic performance in a three-year-term Reading course in a community college during the COVID-19 pandemic. Through qualitative design, the research examined the dropout rates, attendance, assignments, and assessment grades during fall semesters (2020-2022). The results showed more apathy, lack of confidence, decrease in communication, and social isolation, especially in terms of online training. To overcome these issues, new approaches such as group conversation, modelling reading, integration of technology, and social-emotional assistance were put into practice. Despite some small gains, the level of understanding and success remained low, which emphasizes the necessity to introduce extensive, engagement-based and technology-enhanced methods of education.

Charlotte Le Heron, Clay B. Holroyd, John Salamone, and Masud Husain (2019) discussed it as a motivational disorder with decreased goal-oriented behaviour. Combining neuroimaging, animal models and computational theories of motivated behaviour, the authors determined dysfunction of medial frontal cortex and subcortical loops as a core of apathy in both neurological and psychiatric disease. The review suggested a systems-level model that connects impaired motivational mechanisms to clinical apathy, and it has established similarities between fundamental neuroscience discoveries and patient behaviour. The research develops a multidimensional and neuro computational perspective of apathy as more than just psychological explanations

G. Lafond-Brina and A. Bonnefond (2025) conducted a longitudinal study (lasting 4.5 years) with a multidimensional apathy that serves to predict depressive and psychotic disorders in young people. The researchers used 470 young adults going through validated measures of apathy, depressive symptoms, motivation, and self-esteem. Results indicated that executive apathy was a major predictor of depressive disorders and emotional apathy of psychotic disorders. The two dimensions were highly time stable over a period of four years. These findings outline that apathy is a multidimensional and clinically significant construct, and that emotional and executive apathy can be used as early and readily available indicators of youth vulnerable to significant psychiatric shifts.

D. E. Clarke et al. (2007) critically reviewed the psychometric properties of the Clinician Version of the Apathy Evaluation Scale (AES-C) in an attempt to determine its suitability in describing and measuring apathy. The review looked at the items reduction process and procedure, administration and scoring techniques. Results showed a high internal consistency and good support of discriminant, convergent, and criterion validity. Satisfactory test-retest and inter-rater reliability was also reported in the original validation study, but replication of these estimates has not been extensively done. Predictive validity evidence was observed to be less than adequate pointing to the necessity to

conduct further longitudinal validation. All in all, the AES-C was deemed a valid and reliable tool of clinical measurement of apathy.

C. S. Guerrero et al. (2025) examined the multidimensional nature of the apathy concept among people with mild cognitive impairment (MCI) and Alzheimer disease (AD) through the Clinician Version of the Apathy Evaluation Scale (AES-C). Using Exploratory Graph Analysis (EGA) the researchers have found a four-factor structure interest and motivation, autonomy, novelty, and social apathy that are reported to have better fit and conceptual clarity than the traditional factor analytic approaches. The EGA-generated model was found to have a good internal consistency, and convergent and discriminant validity in clinical subgroups. The results emphasize the idea of apathy as a multidimensional phenomenon and the effectiveness of network-based strategies to improve the accuracy of diagnosis and provide evidence-based measures of targeted intervention in cognitive impairment.

Patricia L. Lockwood, Yuen-Siang Ang, Masud Husain, and Molly J. Crockett (2017) sought to examine the relationship between empathy and apathy-motivation in healthy adults in two samples (N = 378; N = 198). The study based on self-report and behavioural measures established a positive relationship between cognitive empathy and motivation whether in behavioural, social, or emotional dimensions. On the other hand, affective empathy was found to have low behavioural and high emotional motivation. Factor analyses showed that empathy and apathy are different constructs but affective empathy and emotional motivation had a common latent factor. The research findings emphasize the empathic process as a motivational process that has a clinical application.

H. Jo (2024) reviewed the behavioural factors that affect the usage and adoption of ChatGPT by the students of higher education. The paper has delved into the role of self-learning with ChatGPT and its contribution to knowledge and personal academic effectiveness. Results showed an improvement of perceived novelty and perceived benefits due to chatbot personalization, which in turn improves behavioural intention and actual use. Personal influence held a positive relationship with perceived benefits and intention to use. Privacy issues, technophobia and guilt feelings were however noted to be major obstacles towards adoption. Innovativeness was found to be a good predictor of behavioural intention and usage behaviour.

A. R. Vargas-Murillo, I. N. M. De la Asuncion, and F. De Jesus Guevara-Soto (2023) investigated the effects of ChatGPT in higher education. The review examined the literature in various academic databases and found the opportunities and challenges related to AI-assisted learning. Results indicate that ChatGPT can be useful in improving academic writing, data processing, curriculum development, and work-related activities of librarians. Nevertheless, there was an apprehension about the ethical use, possible overreliance and loss of critical thinking abilities. The authors recognized that responsible integration frameworks were

necessary to make sure that in higher education situations, AI technologies do not eliminate but complement higher-order cognitive engagement.

R. Firaina and D. Sulisworo (2023) provided evidence on the attitudes of lecturers towards higher education in ChatGPT use, based on qualitative interviews. The paper has explored the adoption frequency, perceived productivity benefits, and adoption or non-adoption rationales. The results showed that ChatGPT is useful in information search, generating ideas, translation, and constructing alternative questions to further conceptualize. Respondents also complained about improved productivity and efficiency in learning; they noted that AI generated content needed to be critically evaluated and verified. The authors came to the conclusion that ChatGPT is a promising educational tool, but to make it effective, it is necessary to have informed, selective, and responsible practices of its implementation.

Gonzalez-Garcia et al. (2025) used a quantitative, cross-sectional study to determine how the use of ChatGPT affects the academic outcomes of nursing students. The population of the study was 98 undergraduate students of nursing and the validated questionnaires used to measure AI knowledge, perceptions and academic outcomes. The findings showed that the academic grades of students who used ChatGPT were much higher and 89.5 percent of students claimed to have improved their grades. It was found that there was a positive correlation between the use of ChatGPT in the past and the GPA. Furthermore, the female students felt that ChatGPT was more useful in academic activities than the male students. The results indicate that the application of AI in nursing education improves learning and technology flexibility in professional training settings.

Lawal Ibrahim Dutsinma Faruk et al. (2023) investigated the acceptance and use of ChatGPT among university students using a psycho-technical model of the alliance of technological, contextual, and psychological factors. The study reported that the predictive relevance of the perceived usefulness was significant, and the predictive relevance of ease of use and facilitating conditions were not significant using Partial Least Squares Structural Equation Modelling across samples in the two Asian nations. The use of contextual factors such as perceived humanness and novelty value had a positive impact on usage behaviour. Of the personality traits, openness yielded positive relationships with usage whereas, agreeableness and neuroticism yield negative relationships. The results emphasize the need to adopt a combination of psychological disposition and contextual gratification in explaining the adoption of generative AI in higher education institutions.

M. Taktak and G. Bafraali (2025) designed and tested the ChatGPT Usage Scale to determine the attitude of individuals and organizations regarding the integration of ChatGPT into the educational environment. The authors performed a three-stage methodological design that consisted of Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and test-retest analyses of reliabilities using various samples of participants. The 12-item-scale had two dimensions

"opportunities" and "challenges" whose model fit indices were acceptable and internal consistency satisfactory ($\alpha = .71$). Other validity tests including criterion and item-total correlation tests helped in supporting the soundness of the scale. The instrument provides a psychometrically adequate means of assessing attitudinal orientation towards the use of ChatGPT in learning.

D. Playfoot, M. Quigley, and A. G. Thomas (2024) investigated intentions of undergraduates to use ChatGPT to write an assignment and its relationship with academic dishonesty. Out of 160 UK psychology students, 32% replied that it would be willing to use AI tools, and 15% replied that it had previously used them. Self-efficacy of personality traits, academic performance, and study skills did not anticipate use of AI. Rather, the new degree of construct apathy turned out to be the only meaningful predictor. Students with a high degree of apathy were more willing to use AI, especially in cases where perceived detection risk and penalty were lower. The results place apathy as a serious psychological risk factor that leads to AI-aided academic misbehaviors.

J. Klarin, E. Hoff, A. Larsson, and D. Daukantaite (2024) considered how often adolescents use generative AI and perceived it as helpful in comparison with their executive functioning (EF). In two samples ($N = 385$; $N = 359$) it was shown that ChatGPT was the most used tool with greater use among older adolescents. Students who had higher EF difficulties found AI as more helpful in finishing academic activities. Nevertheless, there was no significant correlation between academic performance and the use of AI or usefulness. The article notes that personal cognitive traits, especially executive functioning, are also factors in dependence of generative AI among students, and actionable educational integration strategies are necessary.

A. Gillies (2025) tested the moderating effect of locus of control on the relationship between digital technology self-efficacy and trust in artificial intelligence (AI). The research used a correlational cross-sectional design and a sample population of 125 U.S. adults based on the self-efficacy theory by Albert Bandura and the locus of control theory by Julian Rotter. The moderated multiple regression analyses showed that digital self-efficacy, locus of control, and the interaction of the two factors failed to predict trust in AI significantly. The results indicate that the earlier developed psychological predictors of technology trust do not necessarily result in the AI settings and the necessity to investigate other psychological and contextual predictors of AI adoption. Simon

Cassidy and Peter Eachus (2000) investigated the correlation relationship between learning styles, academic locus of control, academic self-efficacy, perceived research methods proficiency (RMP) and academic achievement in undergraduate students. Pre- and post-module assessments yielded results that showed that perceived proficiency was significantly improved after the instruction, and its academic performance was positively correlated. Strategic learning strategies were related positively to perceived proficiency and

achievement and the surface and apathetic learning strategies were negatively correlated. Perceived proficiency had negative correlations with external locus of control beliefs. The findings indicate that the academic belief systems and motivational orientations of performance are affected by the effect of internal control and adaptive learning strategies on the outcomes in the higher educational institutions.

Olaf Zawacki-Richter, Victoria I. Marin, Melissa Bond, and Franziska Gouverneur (2019) examined a systematic review of artificial intelligence in higher education (AIED) through 146 articles concerning AI published between 2007 and 2018. Results showed that the majority of studies were based on computer science and STEM subjects and they used quantitative research methods. It was found that four main areas of application existed profiling and prediction, assessment and evaluation, adaptive systems and personalization, and intelligent tutoring systems. The review also identified minimal combination of pedagogical theory and there was a lack of critical thought of ethical and practical risks. The authors noted that theoretically informed and ethically informed solutions are required in order to utilize AI successfully in the sphere of higher education.

Enkelejda Kasneci et al. (2023) reviewed the opportunities and challenges of large language models (LLMs), including ChatGPT, in teaching. The commentary described the way in which the LLMs can facilitate content creation, student engagement, interaction, and customized learning experiences. Nevertheless, the authors pointed to the need to create digital literacies and critical competences in students and teachers to successfully overcome limitations, prejudices, and possible abuse. The paper has emphasized upon the significance of pedagogically based integration procedures, sustained human oversight, and explicit training on fact-checking and critical thinking. The authors concluded that properly used LLMs can promote valuable educational innovation and, at the same time, develop awareness of the dangers of AI in the society.

S. Abubakar, A. Jeilani and M. Yusuf (2025) analyzed the influence of AI over-reliance on the learning of students, considering ethical issues and institutional policies as the moderators. Based on quantitative research of 226 undergraduate and postgraduate students, it was found through regression analyses that excessive dependence on AI was linked to low levels of critical thinking, involvement, and high levels of ethical dangers including scholarly dishonesty. These negative outcomes were greatly alleviated through ethical awareness and good institutional policies. Another gap revealed in the study was the discrepancy between the policy frameworks and the confidence of the students in their implementation. The results highlight the significance of balanced AI deployment, ethical literacy, and institutional regulation in perpetuating responsible learning.

Gaczek, Leszczynski, Kot, and Pozharliev (2025) studied the psychological processes behind human-AI interactions within the business decision making situations. As the process of the introduction of artificial intelligence into the work of organizations progresses, it has become even

more significant to comprehend how people perceive and assess results of artificial intelligence-driven processes. The analysis was based on the attribution theory and it concentrated on the locus of causality concept which is whether individuals attribute results to internal factors involving the agent or external situational factors. The authors carried out two experiments based on vignettes and one experiment based on real interaction with 355 experienced marketing managers having business-to-business (B2B) experience. It was found that the managers attributed successful outcomes differently in cases when the interaction was between a human agent and an AI agent. In particular, AI agent success was more likely to be explained by external factors of situational conditions, but the success of human agents was explained by internal factors of competence or effort. Moreover, the success of AI was externally credited, which causes managers to report decreased expected levels of satisfaction working with AI agents. However, in the real interaction, an unsuccessful result was more probable to be explained by direct neglect of the AI system. These findings support the fact that there is a gap of responsibility when it comes to human-AI cooperation where responsibility to the results is not clear. On the whole, the research shows that managerial satisfaction, trust, and acceptance of AI in organizational decision-making situations are affected by the attribution processes to a considerable degree (Gaczek et al., 2025).

Gillies (2025) examined psychological consequences in determining trust in artificial intelligence with a moderating locus of control between self-efficacy and trust in AI systems. With more and more AI technologies playing a role in the decision-making process, the research of the individual disparities that determine the level of trust in the AI-driven systems has become a significant field of study. The research was investigative on how the beliefs regarding the personal control over the outcomes (locus of control) how they are intertwined with the belief regarding the individual capabilities (self-efficacy) to exert any effect on the level of trust towards AI technologies. The research design was a quantitative one, which investigated the moderating effect of locus of control on the correlation between self-efficacy and trust in AI. The results have shown that people who had a greater degree of self-efficacy were more likely to show trust in AI systems. Locus of control however played a big role in this relationship. People with the more internal locus of control who perceived results to be highly dependent on their behavior exhibited these differences in patterns of trust in contrast to those with the external locus of control who indicated that results were highly dependent on external factors like chance or external forces. All in all, the results indicate that locus of control is an important mediating factor in determining the levels of trust in artificial intelligence. The research points out the significance of variables related to personality in the perception, assessment, and engagement of AI technologies by the individuals (Gillies, 2025).

Biswas and Murray (2024) investigated the psychological connection that people establish with artificial intelligence technologies as they are becoming a part and parcel of life. Even though past studies had concentrated on

quantitative models of technology usage and the possible development of addiction-like behaviour, the authors believed that this might be inadequate to explain the more profound psychological relationships that people develop with AI-driven technologies. A mixed-methods research design was used in the study to investigate the phenomenon that the authors presented as a sense of incompleteness without technology and how dependency, trust, and emotional attachment to AI expressed by people with different degrees of technical knowledge contrast. The quantitative results showed that people who described themselves as technologically savvy expressed higher levels of dependence on AI-based recommendations and predictive systems significantly. Nevertheless, general patterns of AI usage and even habitual technology use did not differ significantly in groups. In line with these results, qualitative research of the open-ended responses of the participants showed that there were themes that concerned convenience, task-specific trust and concerns about autonomy and accuracy of AI systems. It is interesting to note that, regardless of their levels of technological expertise, all respondents of the questionnaire expressed a very negative emotional response upon imagining the lack of technology, and their answers to this question frequently included the notion that it made them feel incomplete psychologically. These results indicate that the use of AI technologies could go beyond practical use and meet some wider psychological requirements. The novel theoretical frameworks are needed to address the psychological and emotional consequences of AI dependence in the society that becomes more and more technology-centered (Biswas and Murray, 2024).

Harlev, Ravona-Springer, Koren, Zorani, Plotnik, and Wolpe (2025) tested the objective method to apathy measurement in terms of behavioural and physiological results in a virtual reality (VR) setting. Apathy is a decline in motivation, change in emotional responsiveness, and goal-oriented behaviour typically seen in old age and in people with cognitive impairment. Conventional measures of apathy are largely dependent on self-reported or clinical measures of apathy, which might not have ecological validity or objectivity. To overcome this shortcoming, the study sought to determine behavioural patterns that are linked to apathy by examining gaze behaviour during an emotionally salient VR task. The cross-sectional experiment used 85 adults aged over 60 and presented them with personalized positive stimulus (e.g., pictures of their grandchildren), aversive images and neutral pictures whilst they were monitored on their eye movements by use of eye-tracking analysis. Unsupervised K-means clustering was used to group the participants into two behavioural groups, namely, engagements and non-engagements, engaged group demonstrated faster and more sustained gaze responses and non-engaged group exhibited delayed and more variable gaze responses. The findings indicated that the non-engagers had an increased level of apathy and reduced level of cognitive functioning in terms of Montreal Cognitive Assessment (MoCA). Also, physiological reactions revealed a reduced baseline heart rate variability of non engagers. These results indicate that VR-based behavioural and physiological indices can offer a scalable and objective approach to detect apathy-related

motivational impairments, and that gives new assessment opportunities compared to self-report measures that are more standard and traditional (Harlev et al., 2025).

Valova, Mladenova, and Kanev (2024) analyzed the perception and use of ChatGPT among students in the educational context. As the sphere of artificial intelligence technologies rapidly evolves, the use of the ChatGPT app in the educational process begins to gain traction, as the questions of how these tools impact the behaviour of students in their learning and their academic interest start to arise. The objective of the study was to examine the ways students view the usefulness of ChatGPT, where and how often they use it, and their views on its functionality in academic work. The study was conducted using a survey approach and it was conducted among 102 high school and university students in Bulgaria. The survey measured the level of familiarity with ChatGPT among students, the purpose of using the tool, their perception of the tool in solving academic assignments, and whether they are ready to share the usage of this tool with their teachers. The results showed that the students had different attitudes towards the advantages and drawbacks of ChatGPT in education. Most of the participants in the survey indicated that they used the tool to get explanations, generate ideas, and help with assignments. Nonetheless, some questions were also raised about overdependence on AI tools and the possible consequences on the students in terms of critical thinking and developing independent learning skills. The researchers came to the conclusion that although ChatGPT provides a considerable level of educational support and information accessibility, the process of its implementation into the learning setting should be controlled. Teachers are also urged to encourage a moderate stance that uses AI technology and, at the same time, encourages students to think critically, be inventive, and enhance their intellectual ability (Valova et al., 2024). Sallam (2023) has used the systematic review to investigate the possible uses and restrictions of ChatGPT in healthcare education, research, and clinical practice. Due to the high development of artificial intelligence technologies, giant language models like ChatGPT are being actively studied due to their potential to facilitate the knowledge generation, communication, and making decisions in academic and professional environments. The study employed PRISMA guidelines and was a systematic review of 60 research records found in PubMed/MEDLINE and Google Scholar, which investigated ChatGPT use in healthcare-related settings. The review has found that ChatGPT has lots of possible advantages in various spheres. ChatGPT has been identified as useful in the context of healthcare education by supporting the promotion of personalized learning, problem-based learning, and improved critical thinking among students. It was used in research to assist in literature review, analyzing datasets, code generation, and scientific writing, and thus enhanced efficiency and usability to the researcher. Also, in medical practice, ChatGPT was linked to a better workflow, documentation, and patient education. Although they have these benefits, there are also major issues that were noted during the review. A significant number of studies presented risks in the ethical domain, misinformation, plagiarism, absence of originality, algorithm bias, and misleading content

creation. Its results highlight the idea that although ChatGPT has a transformative potential in the education and research fields, its implementation should be approached with a lot of care and with well-defined ethical guidelines and responsible-usage frameworks (Sallam, 2023).

Georgiou (2025) examined how generative artificial intelligence applications especially ChatGPT influenced the cognitive experience of students when performing academic writing activities. With the introduction of large language models in educational contexts, there have been concerns about the possibility of these models minimizing the role of deep thinking and active learning among students. The participants were grouped randomly in the study to select one group that was put in an AI-assisted condition, through the use of ChatGPT, and the other was put in a control group, where they completed the task without the aid of AI. The participants were invited to perform a structured argumentative writing assignment, and then answered the Cognitive Engagement Scale-AI (CES-AI), that administered mental effort, attention, deep processing, and strategic thinking. The results showed that those students who employed ChatGPT when writing the essay had much lower cognitive engagements than the students in the non-assisted group. This implies that the use of AI devices can contribute to cognitive offloading whereby people are actively relying on external technologies to do the work otherwise done by actively mobilizing the mind. The research also shows significant psychological implications of AI-assisted learning and especially in the context of critical thinking and self-regulated learning of students. Georgiou (2025) stressed the importance of the educational approaches that will promote the responsible and reflective use of AI tools to make sure that technological support does not interfere with the profound thinking of students during their academic work.

Barter, Scott, and Barrett (2025), considered the psychological and emotional consequences of chatbots using artificial intelligence on the students in educational settings. With the enhanced introduction of large language model-powered chatbots into academic settings, there is a chance to utilize them to experience the benefits of personalized learning and academic support. Nevertheless, few studies have examined the psychological implications of it especially the emotional experiences of the students in the process of academic tasks. The research question and hypothesis were to find out the effect of chatbot use on positive and negative affect in students in addition to the moderating impact of familiarity with artificial intelligent chatbots. The study employed a pre-post control group experimental design in which undergraduate students were put in to an AI-assisted group or the control group. The two groups had the same academic task to perform, but only the experiment group was asked to use an AI chatbot in the performance. The affective reactions were also evaluated at the pre- and post-assignment to determine the changes in affect. It was found that students who had used AI chatbots said that they experienced a much lower level of positive affect, with no significant differences based on the negative affect between the two groups. Also, moderating these effects, the degree of familiarity with chatbot technology reduced the extent of negative affect on

positive affect in students who were more familiar with the technology in the first place. These results demonstrate the multifaceted psychological implications of the AI implementation into the educational process, indicating that, on the one hand, chatbots can be used with the functional purposes of offering a student the effective assistance with the academic work; on the other hand, it can lead to the diminishing emotional interest and satisfaction of the students towards the educational activities (Carter et al., 2025).

Gauk, Amir, Putri, and Salimah (2025) explored the topic of ChatGPT as a digital safe space that serves as a source of emotional support and shapes the communication behaviours of Generation Z university students. As conversational artificial intelligence becomes more integrated in daily communication, the paper proposed to investigate how emotional communication with AI chatbots influences user communicative behaviours and emotional expressiveness. A qualitative research design was used, and the researchers conducted semi-structured interviews with 15 Generation Z university students that used ChatGPT on a regular basis. Thematic analysis helped the researcher discover some important themes connected to the emotional and communicative experience of the users. The results indicated that the participants felt that ChatGPT was an unjudged conversation ally and thus they could expose themselves to share personal thoughts and emotions without fear of judgment. Most of the participants described that they felt relieved emotionally, felt less lonely and felt comfortable after talking to the chatbot. In addition, the communication with ChatGPT seemed to impact the communication style of the participants, as some students reported being able to experience better clarity and confidence in their ability to start a conversation with someone. The researchers concluded that communication behaviours of digital-native populations could be defined by emotional supportive relationships with conversational AI. The results point to the psychological and social consequences of communication mediated by AI, which implies that AI tools can affect emotional well-being and interpersonal communication habits of young users (Gauk et al., 2025).

III. METHODOLOGY

The current research will have four main goals: (1) to research the connection between locus of control and emotional apathy in the group of individuals who use ChatGPT as an educational tool; (2) to test the connection between the frequency and nature of ChatGPT use in education and emotional apathy levels; (3) to identify whether students with an internal locus of control report lower levels of emotional apathy compared to students with an external locus of control; and (4) to estimate whether locus of control and the use of ChatGPT have a significant mutual predictive value.

➤ *Research Design*

The present study employed a quantitative, cross-sectional correlational research design to examine the relationships between ChatGPT usage in education, locus of control, and emotional apathy among individuals who use

ChatGPT for educational purposes. Since the variables under investigation (ChatGPT usage, locus of control orientation, and apathy levels) are naturally occurring psychological and behavioural constructs, experimental manipulation was neither feasible nor ethically necessary.

➤ *Participants*

The study consisted of individuals who use ChatGPT for educational purposes. Participants were recruited using a non-probability convenience sampling method through online circulation of a Google Form link. Participants were recruited via institutional student groups, academic networks, social media platforms, peer and family circulation and non-probability convenient field sampling. A priori sample size was determined using G*Power (Faul et al., 2007) for minimum sample size determination (medium effect size $f^2 = .15$, $\alpha = .05$, power = .80, predictors = 3), which suggested a minimum required sample of approximately 130 participants. To enhance generalizability, a larger sample of 170 participants was targeted. Inclusion criteria consisted of individuals Aged 18 years and above with familiarity or exposure to ChatGPT in an educational context.

➤ *Variables*

- Independent Variable = ChatGPT Usage in Education

- Dependent Variable = Emotional Apathy
- Moderating Variable = Locus of Control

➤ *Instruments*

- *Rotter’s Locus of Control Scale:*

Developed by Julian Rotter (1966), this scale measures internal versus external control orientation. Higher scores indicate greater external locus of control.

- *Apathy Evaluation Scale (AES):*

Developed by Robert S. Marin, the AES assesses motivational deficits across emotional, behavioural, and cognitive domains. For this study, the emotional apathy dimension was analyzed.

- *ChatGPT Usage in Education Scale:*

Adapted from M. Taktak and G. Bafralı (2025), this scale measures attitudes toward ChatGPT across two dimensions: opportunities and challenges.

All instruments demonstrated acceptable internal consistency (Cronbach’s $\alpha \geq .70$) in previous validation studies.

Table 1 Psychometric Properties of Scales Used

Scale	Reliability (α)	Validity Type	Evidence
Rotter’s Locus of Control Scale	$\alpha = .65-.79$ (reported across studies)	Construct, Criterion, Content	Extensive cross-cultural validation
Apathy Evaluation Scale (AES)	$\alpha = .86-.94$ (Marin et al., 1991)	Construct, Convergent, Discriminant	Validated in clinical and student samples
ChatGPT Usage in Education Scale	$\alpha = .80-.90$ (emerging literature)	Face, Content, Construct	Expert review; factor analysis support

The tools used to measure the variables, including Locus of Control Scale by Rotter and Apathy Evaluation Scale, are well- founded and psychometrically sound gives the results of the current study a high degree of credibility. Both scales have gathered sufficient validity and reliability data among different populations including university students, which is quite close to that of the target population in this study. The discriminatory characteristic of Apathy Evaluation Scale in terms of apathy and similar but different constructs especially depression is especially timely with the possibility of the overlapping of constructs in student mental health research. ChatGPT Usage in Education Scale, though showing sufficient face and content validity, is a field of current psychometric development. Findings linked to this measure should be interpreted with due care by researchers and readers, given that its evidence base in terms of validity is less developed than the other two instruments are. The current study would be enhanced in future cases by incorporation of more validation information of this scale such as confirmatory factor analysis and multi-sample comparisons. In general, the psychometric characteristics of the tools chosen in this study suit the research questions which are aimed at, and the results may be discussed with the relatively high level of the reliability of the interpretation of the integrity of the measurement system adopted.

➤ *Research Question and Hypotheses*

- RQ1. What is the relationship between locus of control and emotional apathy among undergraduate students using ChatGPT for educational purposes?
- RQ2. How is the use of ChatGPT in education associated with emotional apathy among undergraduate students?
- RQ3. Is there a significant difference in emotional apathy between students with an internal locus of control and those with an external locus of control?
- RQ4. Do locus of control and ChatGPT usage significantly predict emotional apathy among undergraduate students?
- ✓ H1: The locus of control will be significantly related to emotional apathy among the undergraduate students.
- ✓ H2: The use of ChatGPT in education will have a significant correlation with the emotional apathy in undergraduate students.
- ✓ H3: Students who possess an internal locus of control will have less emotional apathy as compared to those students who possess an external locus of control.

✓ H4: The greater the use of ChatGPT in education, the greater its use will be linked to the level of emotional apathy in undergraduate students.

➤ *Data Collection Procedure*

Structured Google Form questionnaire was used to collect data. Distribution of survey link, informed consent form, demographic questionnaire and standardized scales above were part of the procedure. The participants were notified about the aim of the study, assured confidentiality, and anonymity, and gave an informed consent to the participation. The questionnaire contained demographic information and then the standard psychometric scales. The involvement was voluntary and no personal data was obtained.

➤ *Data Analysis*

The IBM SPSS Statistics (Version 29) were used to analyze data in a systematic process that guaranteed accuracy and validity. First, quality was improved through data cleaning and screening. This involved the absence of values, incomplete answers and outliers using standardized scores and graphical representation like boxplots. Skewness and kurtosis as well as visual representation of histograms were used to evaluate assumptions of normality and ensure the adequacy of parametric analyses. The reliability analysis was conducted with the help of Cronbach Alpha to determine the internal consistency of the scale of ChatGPT usage, locus of control, and emotional apathy. Mean and standard deviations were calculated as the descriptive statistics to summarize the responses of the participants. The correlation between variables was done using Pearson product-moment correlation analysis to determine the strength and direction of the relationships between variables. Lastly, predictive efficacy of the use of ChatGPT and locus of control on emotional apathy was tested using multiple regression. The assumptions of regression were verified, such as the linearity and multicollinearity, before interpretation. The p-value of statistical significance was set at $p < .05$.

➤ *Ethical Considerations*

Ethical rules of research were followed by the study. Participants gave informed consent and they volunteered to participate and their confidentiality was observed. Information was utilized under academic purposes.

IV. RESULTS

Descriptive analysis showed that emotional apathy scores ranged from 20 to 54 with a mean of $M = 34.38$ ($SD = 7.36$). ChatGPT usage scores ranged from 21 to 52 with a mean of $M = 38.62$ ($SD = 5.14$). Locus of control scores

ranged from 3 to 21 with a mean of $M = 12.07$ ($SD = 2.99$). The total sample size included 170 participants. These values indicate moderate levels of apathy, ChatGPT usage, and locus of control among the participants.

➤ *Pearson Correlation Analysis Revealed ChatGPT Usage and Emotional Apathy:*

A significant negative correlation was found ($r = -.315$, $p < .01$), indicating that higher ChatGPT usage was associated with lower emotional apathy.

➤ *Locus of Control and Emotional Apathy:*

No significant relationship was found ($r = .113$, $p = .143$). Locus of control and ChatGPT usage: No significant relationship was observed ($r = .023$, $p = .763$). Thus, only ChatGPT usage showed a statistically significant association with emotional apathy.

An independent samples t-test was conducted to compare emotional apathy between two locus-of-control groups.

- Group 1: $M = 34.19$, $SD = 7.17$, $n = 96$
- Group 2: $M = 34.64$, $SD = 7.64$, $n = 74$

The difference was not statistically significant, $t(168) = -0.392$, $p = .695$. This indicates that emotional apathy did not differ significantly between the two locus-of-control groups.

A multiple regression analysis was conducted to examine whether ChatGPT usage and locus of control predicted emotional apathy. The regression model was significant:

- $R = .337$
- $R^2 = .113$
- Adjusted $R^2 = .103$, $F(2,167) = 10.686$, $p < .001$

This indicates that the predictors explained 11.3% of the variance in emotional apathy.

Predictor Contributions: ChatGPT usage significantly predicted emotional apathy $B = -0.454$, $\beta = -.318$, $p < .001$

- ✓ Higher ChatGPT usage predicted lower emotional apathy.
- ✓ Locus of control did not significantly predict emotional apathy
- ✓ $B = 0.296$, $\beta = .120$, $p = .101$

Thus, only ChatGPT usage emerged as a significant predictor in the model.

Table 2 Descriptive Statistics for Study Variables (N = 170)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
APATHY TOTAL	170	20	54	34.38	7.357
CHATGPT TOTAL	170	21	52	38.62	5.141
LOC TOTAL	170	3	21	12.07	2.986
Valid N (listwise)	170				

Table 3 Pearson Correlation Matrix Among Locus of Control, ChatGPT Usage, and Emotional Apathy

Correlations				
		LOC TOTAL	CHATGPT TOTAL	APATHY TOTAL
LOC TOTAL	Pearson Correlation	1	.023	.113
	Sig. (2-tailed)		.763	.143
	N	170	170	170
CHATGPT TOTAL	Pearson Correlation	.023	1	-.315**
	Sig. (2-tailed)	.763		.000
	N	170	170	170
APATHY TOTAL	Pearson Correlation	.113	-.315**	1
	Sig. (2-tailed)	.143	.000	
	N	170	170	170

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4 Frequency Distribution of Locus of Control Scores

Statistics		
LOCTOTAL		
N	Valid	170
	Missing	0
	Median	12.00

Table 5 Group Statistics for Emotional Apathy Across Locus of Control Groups

LOCTOTAL					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	.6	.6	.6
	4	2	1.2	1.2	1.8
	6	3	1.8	1.8	3.5
	7	6	3.5	3.5	7.1
	8	7	4.1	4.1	11.2
	9	14	8.2	8.2	19.4
	10	12	7.1	7.1	26.5
	11	23	13.5	13.5	40.0
	12	28	16.5	16.5	56.5
	13	20	11.8	11.8	68.2
	14	16	9.4	9.4	77.6
	15	15	8.8	8.8	86.5
	16	17	10.0	10.0	96.5
	17	3	1.8	1.8	98.2
	18	1	.6	.6	98.8
	19	1	.6	.6	99.4
	21	1	.6	.6	100.0
	Total	170	100.0	100.0	

Group Statistics					
	LOC GROUP	N	Mean	Std. Deviation	Std. Error Mean
APATHYTOTAL	1	96	34.19	7.169	.732
	2	74	34.64	7.637	.888

Table 6 Independent Samples t-Test Comparing Emotional Apathy by Locus of Control Groups

Independent Samples Test					
		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
APATHY TOTAL	Equal variances assumed	.273	.602	-.392	168
	Equal variances not assumed			-.389	151.978

Independent Samples Test				
		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
APATHYTOTAL	Equal variances assumed	.695	-.448	1.141
	Equal variances not assumed	.698	-.448	1.150

Independent Samples Test				
		t-test for Equality of Means		
		95% Confidence Interval of the Difference		
		Lower	Upper	
APATHY TOTAL	Equal variances assumed	-2.700	1.805	
	Equal variances not assumed	-2.720	1.825	

Table 7 Model Summary for Multiple Regression Predicting Emotional Apathy

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	LOC TOTAL, CHATGPT TOTAL ^b	.	Enter
a. Dependent Variable: APATHYTOTAL			
b. All requested variables entered.			

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.337 ^a	.113	.103	6.969
a. Predictors: (Constant), LOCTOTAL, CHATGPTTOTAL				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1037.889	2	518.945	10.686	.000 ^b
	Residual	8110.258	167	48.564		
	Total	9148.147	169			
a. Dependent Variable: APATHYTOTAL						
b. Predictors: (Constant), LOCTOTAL, CHATGPTTOTAL						

Table 8 Regression Coefficients for Predicting Emotional Apathy

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	48.363	4.561		10.602	.000
	CHATGPTTOTAL	-.454	.104	-.318	-4.357	.000
	LOCTOTAL	.296	.180	.120	1.648	.101
a. Dependent Variable: APATHYTOTAL						

V. INTERPRETATION

The current work set out to examine how locus of control and the use of ChatGPT affect the emotional apathy in individuals using ChatGPT for educational purposes. Convenient sampling was applied to recruit 170 subjects, and data were gathered based on Rotter Locus of Control Scale, ChatGPT Usage in Education Scale and Apathy Evaluation Scale. Descriptive statistics, Pearson correlation analysis, independent sample t-test, and multiple regression analysis were carried out on the data. Descriptive statistics showed that the sample mean scores of emotional apathy were between 20 and 54 with a mean of M = 34.38 (SD = 7.36) indicating that there was moderate level of emotional apathy in the group of participants. The scores of ChatGPT use were between 21 and 52 with the average M = 38.62 (SD = 5.14)

which means that on average, students have an average-relative-high level of engagement with ChatGPT when it comes to education. The score range of locus of control was 3 to 21 with a mean of M = 12.07 (SD = 2.99), in general, the range is consistent with other scores based on the Rotter scale using with general university populations implying a more or less equal distribution between the internal and external locus of control orientation. All in all, these descriptive values suggest that we are dealing with a psychologically diverse sample with variability on all the three variables of interest. Analysis of Pearson correlation revealed that there was a statistically significant negative relationship between the use of ChatGPT and emotional apathy (r =.315, p < .01).

This shows that students who reported greater significant use of ChatGPT in educational activities were

more likely to have lower levels of emotional apathy. It is quite an interesting and somewhat opposite finding, considering that the literature is alarmist about the idea of AI-assisted learning that it will lead to passivity, lack of engagement, or even affect the emotional process. Rather, the statistics indicate that the use of ChatGPT can be linked with higher levels of emotional involvement or motivation among students, at least in the educational setting. Contrary to it, locus of control did not reveal any statistically significant correlation with emotional apathy ($r = .113$, $p = .143$) or with ChatGPT use ($r = .023$, $p = .763$). According to these findings, locus of control, as assessed by the scale by Rotter, has no significant linear relationship with either emotional engagement or the use of AI-tools in this sample. The lack of a strong correlation between locus of control and the use of ChatGPT also carries theoretical implications because it suggests that the beliefs regarding the personal agency and control over the outcomes would not significantly influence the disposition towards the use of AI tools in education. The independent sample t-test used to determine the level of emotional apathy as between the students categorized under two locus-of-control conditions (internal and external) gave a non-significant value, $t(168) = 0.392$, $p = .695$. The mean apathy score of Group 1 ($n=96$) was $M=34.19$ ($SD=7.17$), and the mean of apathy score of Group 2 ($n=74$) was $M=34.64$ ($SD=7.64$). The insignificant difference in means and non-significant p-value prove that the membership of locus of control group did not distinguish the participants in the field of emotional apathy.

This conclusion causes the rejection of Hypothesis 3 that suggested that the emotional apathy levels of students with an internal locus of control would be substantially lower than in students with an external locus of control. The multiple linear regression test studied the hypothesis that emotional apathy was predicted by the use of ChatGPT and the locus of control. The entire regression equation was found statistically significant, $F(2, 167) = 10.686$, $p = .001$, and $R = .337$ and $R^2 = .113$. This implies that the two predictors combined explained about 11.3 percent of the variance of the emotional apathy as indicated by an Adjusted R^2 of 0.103. Although this is a small effect size, it is not non-existent in the context of psychological and behavioural studies, especially having comparatively limited predictors. Analyses of predictor effects showed that the use of ChatGPT was a strong predictor of emotional apathy ($B = -0.454$, $b = -.318$, $p < .001$), whereas locus of control was not significant ($B = 0.296$, $b = .120$, $p = .101$). The direction of the relationship in the correlation analysis is supported by the negative standardised beta coefficient ($b = .318$) of the relationship between increase in ChatGPT usage and decrease in emotional apathy: the higher the ChatGPT use, the lower the emotional apathy. Locus of control although on the right direction was not considered as significant in the regression model.

VI. DISCUSSION

The findings of this research gives a number of valuable insights into the psychological mechanisms involved in the use of AI tools and emotional involvement in the learning

process. The most noticeable one is the strong negative correlation between the use of ChatGPT and emotional apathy. This result is somewhat in line with Hypothesis 2 and Hypothesis 4, and also in line with emerging literature that indicates that AI-assisted tools can be an academic motivator and engagement source, and not passivity. The idea of active engagement with interactive technology is one of the theoretical perspectives under which this finding can be regarded. In contrast to passive media consumption, in the context of academic tasks, students have frequently to ask questions, develop a conversation, critique the content produced by AI, and decide on the quality of information when using ChatGPT. This active process can be able to act as a stimulus to cognitive and emotional involvement, and thus lessen apathy. Such interpretation is consistent with the constructivist theories of education, which are focused on the idea that more learners engage in information processing will be more motivated and emotionally invested. Also, the ChatGPT usage could be associated with self-directed learning behaviour. There is a distinct possibility of a selection effect as students who actively engage in using external aids to augment their learning are those who might already be less apathetic. The more curious people, academic self-efficacy, or goal-oriented might tend to adopt AI tools, at the same time showing an increased level of emotional involvement. This interpretation raises important questions about directionality, which cannot be resolved in the present correlational design. The non-significant findings for locus of control are more difficult to account for.

Theoretically, individuals with an internal locus of control who believe they have agency over their life outcomes might be expected to display greater emotional investment in their academic environment, thereby exhibiting lower apathy. However, the present data do not support this assumption. This may reflect the multi-dimensional and context-sensitive nature of locus of control, which may not operate uniformly across all domains. Academic apathy may be driven more by situational or contextual factors such as institutional environment, curriculum relevance, peer support, and engagement with technology rather than by relatively stable dispositional traits like locus of control. It is also possible that the Rotter's scale, developed in 1966, may not fully capture contemporary conceptualisations of locus of control in the digital age, where students' sense of control may be distributed across both personal agency and reliance on digital tools.

Furthermore, the relatively narrow range of locus of control scores ($M = 12.07$, $SD = 2.99$) in this sample may reflect restricted variance, which would attenuate any potential correlations with apathy.

VII. CONCLUSION

The current research paper reflects that the use of ChatGPT is a considerable negative predictor of emotional apathy in university students, whereas the locus of control does not play an essential role in influencing emotional apathy on its own or in interaction with the use of AI tools. Such results indicate that learners who are more likely to use

ChatGPT in learning are less prone to emotional disengagement. Although the total regression equation predicts a moderate share of the change in emotional apathy ($R^2 = .113$), it also indicates the new relevancy of the use of AI tools as a psychological characteristic in the study of higher education. The data confirms partially the hypothesised relationships: Hypothesis 2 (significant relationship between ChatGPT usage and emotional apathy) and Hypothesis 4 (greater ChatGPT usage related to the level of emotional apathy) are confirmed by the data. Nonetheless, Hypotheses 1 and 3 that projected substantial influences of locus of control on emotional apathy are not supported. These findings provoke some of the expectations of the literature on the centrality of locus of control in predicting academic apathy and provide an opportunity to review the variables that are most likely to be considered in the context of emotional engagement in technology-mediated learning settings. These findings have some practical implications on institutions of learning and policy makers. Instead of being worried about the AI tools, such as ChatGPT, as possible sources of disengagement, the data indicate that the inclusion of the tools into the educational process can be linked with the overall improvement in the level of emotional engagement among the students. A possible contribution to the field of education and curriculum development can be an intention to use AI tools in a structured and guided way as a component of pedagogical techniques to minimize the apathy and encourage motivation among university students.

LIMITATIONS AND FUTURE DIRECTIONS

There are a few shortcomings of the current research that should be mentioned. To start with, convenience sampling limits the external validity of the results. The study sample was comprised of university students recruited without systematic randomisation that can lead to selection bias. Voluntarily involved students might not be similar to non-participants regarding such critical attributes as motivation levels and familiarity with ChatGPT at the very baseline. Second, the correlational research design does not allow making any causal conclusions. Although the data indicate that the use of ChatGPT is strongly related to reduced emotional apathy, it cannot be concluded in which direction the effect is observed. It is equally likely that students who are less apathetic are the ones who will pursue and use ChatGPT, and not that the use of ChatGPT will lead to apathy diminishments. Causal directionality would require longitudinal or experimental designs. Third, the research was purely based on self-report measures. Both ChatGPT Usage in Education Scale and Apathy Evaluation Scale are prone to social desirability bias and inaccurate perception of self. There is a possibility of students overreporting and underreporting the use of educational ChatGPT and the feeling of apathy because of the perception of social expectations of academic activity and the application of AI tools. The validity of future research would be enhanced by objective measurements of the frequency of ChatGPT use as well as the assessment of apathy by the observer. Fourth, the regression model was significant but only explained about 11.3 per cent of all the variance of emotional apathy. It implies that the two predictors of emotional apathy employed

in this study fail to explain a significant percentage of variation in emotional apathy. Future studies ought to reflect the inclusion of other variables that may be linked to emotional apathy in the academic context, e.g. academic burnout, social isolation, relevance of curriculum to the student, mental health condition, peer relations, and the institutional support. Several multivariate models that use these variables would significantly enhance explanatory capacity. Fifth, the research failed to distinguish the types and purposes of using ChatGPT. ChatGPT can be used by students in a variety of tasks such as brainstorming a topic and providing an explanation, down to plagiarizing homework. The type and quality of ChatGPT interaction may be differentially related to emotional apathy. This nuance would be best captured in future research by considering qualitative aspects of AI use. Sixth, the sample (170) was not adequate enough to support generalizability of statistical tests undertaken, but it was less than the initially intended number of 200 subjects. The strength of the analyses was satisfactory, but the presence of a larger and more varied sample with the multitude of perspectives and contexts of different universities and academic fields would add the strength and external validity of the results. Future research should also examine the moderating effects of variables on the relation between the use of ChatGPT and emotional apathy: the academic year, discipline of study, and previous experience with AI tools. Studying longitudinal designs that follow students through semesters may help us further understand how AI tool patterns of use change over the semesters with emotional involvement. Also, qualitative research might be used to create a deeper understanding of the subjective experience of ChatGPT use among students and its influence on their sense of academic purpose, motivation, and emotional investment. Comparative studies that would investigate the differences between various student cohorts in other educational systems or cultural backgrounds, would also provide some rich cross-cultural insights to this emerging field of research.

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