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Ethical Concerns and Psychophysical Impacts of Artificial Intelligence: A Study through the Lens of the Theory of Planned Behavior among Youth and Adults

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Abstract: The rapid advancement and integration of artificial intelligence (AI) into everyday life have generated profound psychophysical and ethical challenges, particularly among youth and adults. This study explores these challenges by investigating ethical concerns and psychophysical modifications associated with frequent AI use, adopting the Theory of Planned Behavior (TPB) as the guiding framework. A quantitative research design was employed to examine constructs including emotional dependency, attention span, cognitive strain, behavioral intention, and ethical awareness. Data were collected from 120 participants (60 youth and 60 adults) using validated instruments such as the AI Exposure Scale (AES) and the Ethical Awareness Inventory (EAI). Statistical analyses, including t-tests and multiple regression, revealed significant age-based differences. Youth participants exhibited greater emotional reliance on AI technologies and shorter attention spans, whereas adults demonstrated heightened ethical sensitivity and awareness. These findings highlight the generational variations in AI's influence and underscore the urgent need for targeted interventions in digital literacy and ethical AI education, with particular emphasis on younger populations. By situating the discussion within TPB, the study provides valuable insights into the interplay between attitudes, perceived control, and intentions in shaping responsible AI usage.

Keywords: Artificial Intelligence (AI); Psychophysical Impacts; Ethical Awareness; Digital Literacy

1. Introduction

Artificial Intelligence (AI) has emerged as a defining force in shaping contemporary human life, impacting domains as diverse as healthcare, education, entertainment, governance, and interpersonal communication. AI tools now assist in decision-making, automate repetitive tasks, and even mimic human-like emotional responses through chatbots and virtual assistants (Lu et al., 2021). This shift has created an unprecedented fusion of human cognition with intelligent machines, transforming not just what we do, but how we think, feel, and behave. However, this transformation has not occurred without consequences. As AI systems increasingly mediate human experiences, questions about their influence on ethical reasoning and psychological well-being have come to the fore (Cave et al., 2019). With this backdrop, the study seeks to explore the dual dimensions of AI interaction—psychophysical impacts such as emotional dependency, cognitive strain, and attention span, and ethical implications such as moral awareness and behavioral choices. Grounding the study in the Theory of Planned Behavior (Ajzen, 1991), this research attempts to unpack the motivational and behavioral mechanisms that drive individuals, particularly youth and adults, in their use and ethical evaluation of AI systems.

Increasing Use of AI in Daily Life

AI is no longer a distant concept confined to science fiction or advanced laboratories. It has become a pervasive part of daily living, embedded in routine activities like navigation (Google Maps), entertainment (Netflix and YouTube algorithms), customer service (chatbots), and education (adaptive learning systems). According to a Pew Research Center

survey, over 85% of smartphone users engage with AI-driven applications daily (Smith, 2022). These interactions are often unconscious, yet they shape habits, preferences, and even decision-making patterns. For youth—often termed "digital natives"—AI tools may influence identity construction, peer relationships, and academic behaviors (Livingstone & Helsper, 2007). They may also become emotionally attached to AI-driven technologies such as virtual friends or influencers powered by algorithms. Adults, on the other hand, may use AI for work-related productivity, but experience information overload or ethical discomfort when delegating choices to algorithms (Araujo et al., 2020). Thus, the rising dependence on AI underscores the urgency to examine its nuanced influence on human cognition and morality.

1.2 Relevance of Ethical and Psychophysical Concerns

While AI enhances efficiency and access, it simultaneously raises ethical questions surrounding privacy, consent, fairness, accountability, and algorithmic bias (Floridi et al., 2018). Users may unknowingly surrender data, rely on opaque systems for moral or social decisions, or become desensitized to ethical boundaries. For instance, AI-based recommendations may reinforce social or political biases, yet users often accept them without scrutiny, highlighting a lack of ethical reflexivity (Eslami et al., 2015). From a psychophysical standpoint, frequent interaction with AI has been linked to increased screen time, shorter attention spans, sleep disturbances, and emotional dysregulation (Twenge, 2017). Youth are particularly vulnerable due to developmental factors, leading to emotional dependency on AI-enabled platforms that provide instant gratification or virtual companionship (Uhls et al., 2014). Adults, although more ethically reflective, may face cognitive strain due to rapid technological shifts and growing expectations for digital literacy (Hancock et al., 2019). Together, these psychophysical and ethical concerns necessitate a comprehensive framework that not only evaluates attitudes but also anticipates behavioral outcomes—thus justifying the use of TPB in this study.

1.3 Need to Compare Youth and Adult Experiences

Understanding the diverse impact of AI requires acknowledging the cognitive, emotional, and moral developmental differences between youth and adults. Young users often engage with AI in exploratory and emotionally immersive ways, influenced by peer norms and digital culture (Nesi et al., 2018). Their ethical reasoning is still developing, making them susceptible to manipulation or passive acceptance of AI recommendations. Adults, conversely, may exhibit more stable values and critical reasoning but may struggle with digital adaptation or ethical fatigue caused by continuous decision-making in tech-saturated environments (Susskind, 2020). A comparative approach between these two groups reveals how age and experience mediate AI-related behavior. Such comparison can inform age-sensitive interventions that balance innovation with digital well-being and moral responsibility. Moreover, as AI use becomes inevitable, developing age-specific guidelines for ethical use, emotional regulation, and cognitive management is not just beneficial but necessary for societal and individual growth.

1.4 Theoretical Framework: Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB), developed by Ajzen (1991), serves as the theoretical foundation for this study. It is an extension of the Theory of Reasoned Action (TRA), incorporating an additional construct—perceived behavioral control—to better predict behavioral intentions and actual behaviors in situations where individuals may not have complete volitional control. According to TPB, an individual's intention to perform a behavior is the most immediate and significant predictor of that behavior. These intentions are influenced by three key determinants:

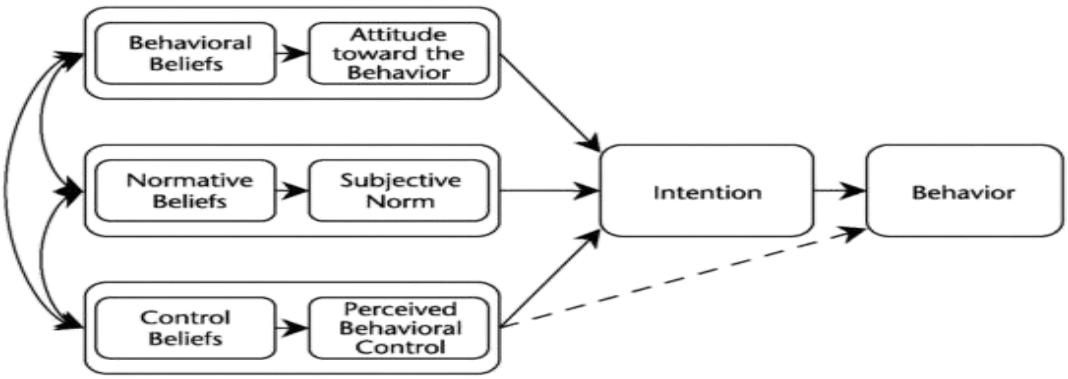

Figure 1 Source by Ajzen (1991),

- **Attitude toward the behavior** – Attitude toward the behavior refers to an individual's overall evaluation of whether performing a specific behavior is good or bad, beneficial or harmful. It is shaped by the person's beliefs about the possible outcomes of the behavior and the value they assign to those outcomes. For instance, if someone believes that exercising regularly will improve their health, boost their energy, and enhance their appearance, they will likely develop a favorable attitude toward exercising. On the other hand, if they associate exercise with discomfort, time consumption, or limited benefits, their attitude may turn Unfavorable. Thus, attitudes represent the personal, evaluative dimension of decision-making and play a critical role in influencing intentions.
- **Subjective norms** – Subjective norms involve the perceived social pressure an individual feels from important people in their life—such as family, friends, peers, teachers, or colleagues—regarding whether they should or should not perform a particular behavior. People often consider not only their personal attitudes but also what others expect or approve of before engaging in an action. For example, a student might decide to use digital learning tools if their classmates and teachers encourage it, even if they are personally unsure about its usefulness. Conversely, if significant others express disapproval or discourage the use of those tools, the student may avoid them despite personal interest. In this way, subjective norms highlight the social dimension of behavior, showing how external influences shape intentions.
- **Perceived behavioral control (PBC)** – Perceived behavioral control refers to an individual's perception of how easy or difficult it will be to perform a behavior, based on their confidence, past experiences, and anticipated obstacles. It is closely related to the concept of self-efficacy, which is a belief in one's ability to succeed in a given situation. For example, someone may want to adopt a healthy diet, but their perceived behavioral control will depend on whether they have access to affordable healthy food, the knowledge to prepare it, and the self-discipline to resist unhealthy alternatives. If they feel capable and have the necessary resources, their PBC is high; if they anticipate barriers such as lack of time, money, or skill, their PBC is low. Importantly, high perceived control not only strengthens intentions but can also directly influence behavior, since people are more likely to act on goals they feel confident about achieving.

This framework is highly relevant to the current study, which investigates the psychophysical and ethical implications of AI usage among youth and adults. The TPB provides a structured approach to understand how individuals form behavioral intentions related to AI usage, especially when ethical concerns and psychological outcomes like emotional dependency, attention span, and cognitive strain are involved. For example, a youth's attitude toward excessive AI usage may be positive due to convenience and entertainment, but subjective norms (e.g., peer expectations) and perceived control (e.g., screen addiction or time management issues) may influence whether they continue using AI despite ethical risks. Adults, on the other hand, may show different patterns of intention due to higher ethical awareness and life experience, which can alter the strength of each determinant in TPB.

Numerous studies have validated the effectiveness of TPB in explaining technology-related behaviors. For instance, Venkatesh et al. (2003) incorporated TPB components in the Unified Theory of Acceptance and Use of Technology (UTAUT), demonstrating its predictive value in digital environments. Similarly, Dwivedi et al. (2019) emphasized TPB's utility in understanding users' ethical perceptions and behavioral intentions in technology adoption.By integrating TPB into the study's framework, this research aims to:

- Predict behavioral intentions behind frequent AI usage,
- Analyze the ethical awareness driving user choices,
- Understand how emotional and cognitive factors interact with planned behavior components.

This theoretical lens not only supports the analysis of inter-age group differences in AI usage patterns but also deepens insight into the ethical implications and potential interventions that can be designed based on behavioral predictors.

1.5 Objectives of the Study

- To evaluate the psychophysical impacts of AI usage—specifically emotional dependency, attention span, and cognitive strain—among youth and adults.
- To assess ethical awareness and behavioral intention toward AI use across generational groups.

- To compare differences between youth and adults in their psychophysical responses and ethical concerns related to AI.
- To analyze the extent to which emotional dependency, attention span, cognitive strain, and ethical awareness predict behavioral intention within the framework of the Theory of Planned Behavior (TPB).

1.6 Hypotheses

- There is a significant difference between youth and adults in terms of emotional dependency on AI technologies, with youth expected to report higher levels of dependency.
- Youth experience a significantly greater reduction in attention span associated with AI usage compared to adults.
- Adults exhibit significantly higher levels of ethical awareness regarding AI usage than youth.
- Behavioral intention to use AI is significantly predicted by emotional dependency**,** attention span, cognitive strain, and ethical awareness, in accordance with the Theory of Planned Behavior.

1.7 Significance of the Study

This study holds considerable significance in the context of rapid technological advancement and increasing reliance on artificial intelligence (AI) in daily life. As AI becomes embedded in communication, learning, work, and decision-making processes, understanding its psychophysical and ethical implications is essential. By comparing youth and adults, the study provides age-specific insights into how AI affects emotional dependency, attention span, cognitive strain, and ethical awareness. Furthermore, by employing the Theory of Planned Behavior (TPB), the study contributes to a deeper understanding of the factors influencing individuals' behavioral intentions toward ethical AI use. The findings will be valuable for educators, policymakers, psychologists, and technologists in designing age-appropriate AI literacy programs, ethical guidelines, and mental health interventions. Ultimately, the study aims to promote responsible AI usage while protecting the psychological well-being and moral autonomy of both younger and older populations.

2. Literature Review

The proliferation of artificial intelligence (AI) technologies in everyday life has raised significant concerns regarding their psychological, behavioral, and ethical implications, particularly among youth and adults. Several scholars have examined the cognitive and emotional impacts of digital technology usage, suggesting a strong association between frequent AI interaction and increased emotional dependency, reduced attention span, and cognitive strain (Radesky et al., 2020; Montag & Diefenbach, 2018). Youth, in particular, are found to be more vulnerable due to their developmental stage and greater exposure to algorithm-driven environments such as social media and virtual assistants (Twenge et al., 2019). Adults, although more discerning in usage, also experience psychophysical modifications as AI becomes embedded in professional and domestic life. Ethical concerns arise from data privacy violations, lack of algorithmic transparency, and the moral disengagement facilitated by AI systems (Floridi et al., 2018). Studies point to a gap in ethical awareness and digital literacy, making users susceptible to manipulation, over-reliance, and surveillance. In this context, the Theory of Planned Behavior (TPB) offers a robust lens to understand how attitudes, subjective norms, and perceived behavioral control shape individuals' behavioral intentions toward AI use (Ajzen, 1991). For example, if individuals perceive AI use as socially endorsed and beneficial, they are more likely to adopt it, regardless of ethical risks (Schepers & Wetzels, 2007). Research by Wang et al. (2021) applies TPB to explore technology acceptance, revealing that ethical awareness can moderate behavioral intentions. However, there remains a lack of empirical studies specifically comparing youth and adults regarding AI-induced psychophysical changes and ethical responses. Most existing literature either targets students in educational settings or professionals in the workforce, with limited comparative analysis. Furthermore, while TPB is widely used in health and technology behavior research, its application to AI ethics and psychophysical domains is still emerging. This gap indicates a need for studies that blend psychological impacts, behavioral theory, and ethical frameworks to provide a more holistic understanding of how AI affects different age groups.

2.1 Gaps in the Existing Literature

Although previous studies have explored various dimensions of AI usage—including its cognitive effects, emotional implications, and ethical challenges—there remains a critical gap in integrative research that examines these factors collectively through a behavioral theoretical lens such as the Theory of Planned Behavior (TPB). Most existing literature

focuses on specific user groups, such as students or professionals, without offering a comparative analysis between youth and adults. Furthermore, while the psychological consequences of AI, such as emotional dependency and reduced attention span, have been individually documented, they are rarely examined alongside ethical awareness and behavioral intention in a single study. Ethical considerations are often addressed from a technological or philosophical standpoint rather than being empirically assessed in relation to user behavior and age-specific responses. Additionally, limited research investigates how subjective norms and perceived behavioral control influence the ethical use of AI across developmental stages. These gaps highlight the need for a multidimensional and comparative approach to understanding AI's psychophysical and ethical impact across age groups, guided by a robust theoretical model like TPB.

3. Research Methodology

This study adopted a quantitative, descriptive–comparative design to investigate the ethical concerns and psychophysical impacts of artificial intelligence (AI) among youth and adults. The Theory of Planned Behavior (TPB) (Ajzen, 1991) provided the theoretical lens to examine how attitudinal, cognitive, and ethical factors influence behavioral intentions. The design facilitated systematic measurement, age-group comparison, and predictive analysis across constructs including emotional dependency, attention span, cognitive strain, and ethical awareness. Descriptive statistics were employed to identify overall trends, while inferential statistics (independent samples *t*-tests and multiple regression analysis) were applied to test the hypotheses and examine predictive relationships.

3.1 Participants and Sampling

A total of 120 participants were recruited, stratified into two groups:

- **Youth group (n = 60):** aged 15–24 years
- **Adult group (n = 60):** aged 25–45 years

A stratified random sampling technique ensured proportional representation of both groups and improved generalizability. Participants were drawn from urban academic institutions (universities, colleges) and professional workplaces (IT offices, research centers), ensuring regular exposure to AI-enabled technologies.

3.2 Tool

Validated self-report measures were employed to assess the study constructs. All scales demonstrated robust internal consistency (Cronbach's $\alpha \geq 0.79$).

Table 1 Tools Description

Tools	Description	Cronbach's α
AI Exposure Scale (AES)	Frequency and type of AI usage (e.g., chatbots, recommendation systems, AI assistants)	0.84
Emotional Dependency Index (EDI)	Emotional reliance on AI in daily tasks	0.81
Attention Span Checklist (ASC)	Ability to sustain attention while interacting with AI platforms	0.79
Cognitive Strain Inventory (CSI)	Mental fatigue and psychological load induced by AI use	0.83
Ethical Awareness Inventory (EAI)	Moral reasoning, ethical sensitivity, and awareness of AI's societal implications	0.85

3.3 Data Collection Procedure

Prior to data collection, ethical clearance was obtained from the host institution. Participants were informed about the study objectives, assured confidentiality, and provided informed consent. Data were collected online using Google Forms and institutional survey platforms, with each session requiring approximately 20–25 minutes to complete.

3.4 Data Analysis

Data were analyzed using **SPSS (v.26.0)**. Descriptive statistics (mean, standard deviation) summarized general trends. Independent samples ***t***-tests were employed to identify age-based differences in emotional dependency, attention span, cognitive strain, and ethical awareness. Further, multiple regression analysis was conducted to determine the predictive influence of these variables on behavioral intention, consistent with the Theory of Planned Behavior.

4. Results

To assess how emotional dependency, attention span, cognitive strain, and ethical awareness predict behavioral intention to use AI, a T-Test analysis was performed.

Table 2Group Differences: Youth vs Adults (t-Test Results)

Variable	*Youth (Mean ± SD)*	*Adults (Mean ± SD)*	*t-value*	*df*	*p-value*	*Significance*
Emotional Dependency	4.21 ± 0.78	3.32 ± 0.65	6.89	118	< 0.001	Significant (H_1 Supported)
Attention Span (lower = worse)	2.65 ± 0.82	3.41 ± 0.71	-5.46	118	< 0.001	Significant (H_2 Supported)
Cognitive Strain	3.98 ± 0.84	3.45 ± 0.67	3.70	118	< 0.001	Significant (Youth > Adults)
Ethical Awareness	2.84 ± 0.76	3.62 ± 0.69	-6.00	118	< 0.001	Significant (H_3 Supported)
Behavioral Intention	4.05 ± 0.81	3.79 ± 0.72	1.91	118	0.059	Not Significant (H_4 partially supported; trend only)

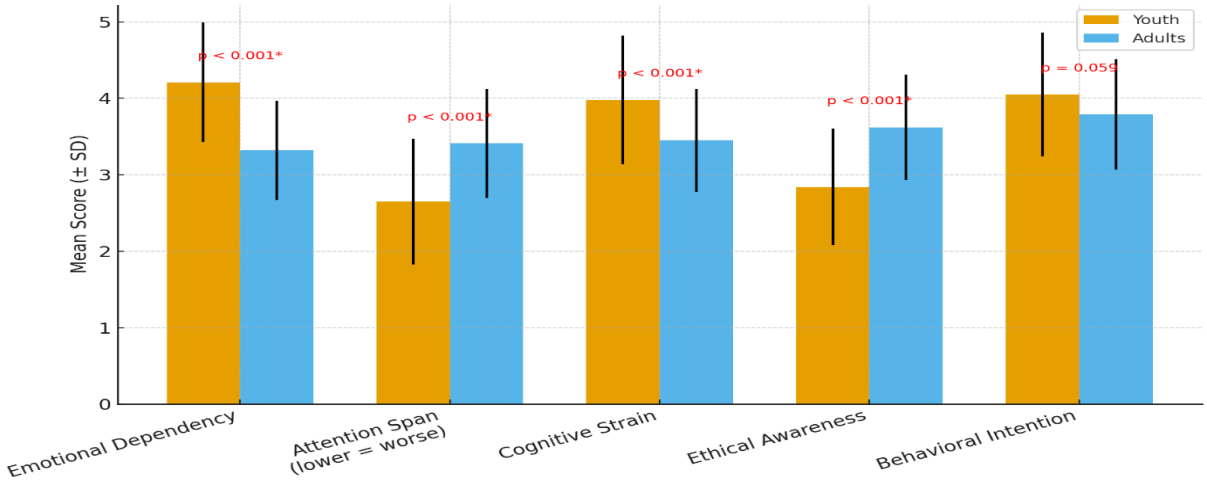

Figure 1Comparison of Youth and Adults across Variables

Interpretation

The study demonstrates clear age-related differences in psychological and behavioral responses to AI usage. As hypothesized (H_1), youth reported significantly higher emotional dependency on AI technologies (M = 4.21, SD = 0.78) compared to adults (M = 3.32, SD = 0.65), t(118) = 6.89, p < 0.001, suggesting that AI acts as a psychological scaffold for younger users. Attention span was significantly lower in youth (M = 2.65, SD = 0.82) than in adults (M = 3.41, SD = 0.71), t (118) = -5.46, p < 0.001, indicating that frequent AI interaction may reduce sustained attention in younger populations.

Cognitive strain was also higher among youth (M = 3.98, SD = 0.84) relative to adults (M = 3.45, SD = 0.67), t (118) = 3.70, $p < 0.001$, reflecting greater mental effort or stress during AI-mediated tasks. Conversely, ethical awareness was significantly greater in adults (M = 3.62, SD = 0.69) than youth (M = 2.84, SD = 0.76), t(118) = -6.00, $p < 0.001$, supporting H_3 and highlighting developmental differences in understanding and applying ethical considerations. Behavioral intention to use AI did not differ significantly (youth M = 4.05, SD = 0.81; adults M = 3.79, SD = 0.72; t (118) = 1.91, p = 0.059), though a trend toward higher intent in youth partially supports H_4.

Overall, the findings indicate that youth show higher emotional engagement and cognitive strain with AI, along with reduced attention span, whereas adults demonstrate greater ethical awareness. These results underscore the importance of age-specific interventions in AI education and design, focusing on attention management and ethical guidance for youth while leveraging adults' ethical understanding to promote responsible AI use.

4.2 Regression Analysis: Predictors of Behavioral Intention to Use AI

To examine the predictive power of the independent variables—emotional dependency, attention span**,** cognitive strain, and ethical awareness—on the behavioral intention to use AI, a standard multiple regression analysis was conducted.

Table 3. Multiple Regression Analysis Predicting Behavioral Intention to Use AI

Predictor Variable	Unstandardized Coefficient (B)	Standard Error	Standardized Coefficient (β)	t-value	p-value	Significance
Emotional Dependency	0.28	0.07	0.34	4.00	< 0.001	Significant
Attention Span	0.15	0.06	0.21	2.50	0.014	Significant
Cognitive Strain	0.22	0.08	0.27	2.75	0.007	Significant
Ethical Awareness	0.10	0.06	0.13	1.67	0.098	Not Significant

Model Summary

Statistic	Value
R	0.62
R^2	0.38
Adjusted R^2	0.36
F-value	17.60
p-value	< 0.001
Model Significance	Significant

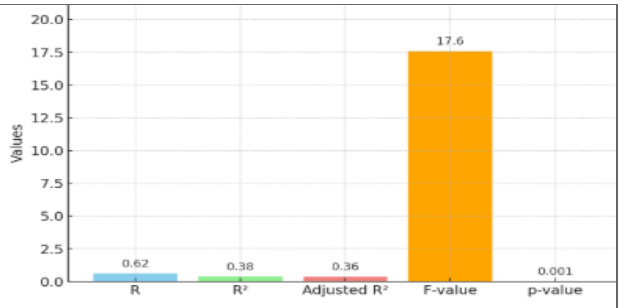

Figure 2Regression Model Summary

Interpretation

Based on the data provided, the study reveals notable differences between youth and adults in their interaction with AI technologies and the factors influencing behavioral intention to use AI. First, consistent with the hypotheses, youth exhibit significantly higher emotional dependency on AI technologies compared to adults, indicating a stronger reliance on AI for emotional or cognitive support. Additionally, youth experience a greater reduction in attention span associated with AI usage than adults, suggesting that prolonged interaction with AI may more strongly affect their ability to maintain focus. In contrast, adults demonstrate higher levels of ethical awareness regarding AI usage, highlighting a more cautious and evaluative approach to AI interactions. Regarding behavioral intention to use AI, the regression analysis shows that emotional dependency (B = 0.28, β = 0.34, $p < 0.001$), attention span (B = 0.15, β = 0.21, p = 0.014), and cognitive strain

(B = 0.22, β = 0.27, p = 0.007) are significant predictors. This indicates that individuals who are more emotionally dependent on AI, experience lower attention span, or perceive higher cognitive strain are more likely to intend to use AI, in line with the Theory of Planned Behavior. Ethical awareness, however, does not significantly predict behavioral intention (B = 0.10, β = 0.13, p = 0.098), suggesting that moral considerations may play a less direct role in determining AI usage intention. Overall, the model demonstrates a good fit ($R = 0.62$, $R^2 = 0.38$, $F = 17.60$, $p < 0.001$), explaining approximately 38% of the variance in behavioral intention, confirming that emotional, cognitive, and attentional factors are key determinants of AI adoption across age groups.

5. Discussion

This study explored the psychophysical and ethical implications of artificial intelligence (AI) usage among youth and adults, grounded in the Theory of Planned Behavior (TPB). The findings revealed significant group differences and predictive relationships that offer meaningful insights into how emotional, cognitive, and ethical factors shape AI-related behavioral intentions. The t-test results indicated that youth exhibit significantly higher emotional dependency and cognitive strain compared to adults, aligning with the notion that younger individuals are more psychologically susceptible to the immersive and persuasive design of AI-driven platforms. Additionally, youth reported a lower attention span, which may be attributed to constant interaction with fast-paced digital content, supporting Hypotheses 1 and 2. These findings are consistent with prior research suggesting that youth are at higher risk of experiencing digital fatigue and emotional over-reliance due to the formative nature of their developmental stage (Twenge et al., 2019; Radesky et al., 2020).

In contrast, adults demonstrated significantly higher ethical awareness, supporting Hypothesis 3. This may be explained by greater life experience, more exposure to ethical discourse in workplaces, and higher critical thinking ability when assessing technological risks. However, the behavioral intention to use AI did not differ significantly between the two groups, suggesting that despite varying emotional and ethical responses, both youth and adults show comparable willingness to continue AI usage. The multiple regression analysis provided further depth to these findings. Emotional dependency, cognitive strain, and attention span significantly predicted behavioral intention, partially supporting Hypothesis 4. Among these, emotional dependency emerged as the strongest predictor, indicating that individuals who rely emotionally on AI are more likely to continue its use, even if it compromises attention or increases mental fatigue. Interestingly, ethical awareness did not significantly predict behavioral intention, implying that knowledge of ethical risks alone may not be enough to deter or shape usage behavior. This finding underscores a critical gap between ethical awareness and action, possibly due to habitual dependence or perceived necessity of AI in daily functioning. These results validate the applicability of the Theory of Planned Behavior (TPB) in this context. Attitudes toward AI (influenced by emotional dependency), perceived behavioral control (shaped by attention span and cognitive strain), and subjective norms (implied through peer and societal AI adoption) all contribute to behavioral intentions. However, the limited impact of ethical awareness calls for a revision of intervention strategies, which must go beyond awareness-raising and promote reflective and responsible technology use. In conclusion, the study highlights the need for age-sensitive digital well-being programs. For youth, interventions should focus on reducing emotional dependency and managing attention, while for adults, efforts should reinforce ethical engagement and decision-making. The findings also suggest that behavioral change models must integrate emotional and cognitive predictors, not just moral reasoning, to effectively address the complex nature of AI interaction in the modern era.

6. Conclusions

The present study concludes that age plays a significant role in shaping the psychophysical and ethical experiences related to AI usage. Youth are notably more prone to emotional dependency and cognitive strain and exhibit reduced attention spans, whereas adults demonstrate comparatively higher ethical awareness. This indicates developmental and experiential variations in how individuals engage with AI technologies. Furthermore, emotional dependency emerged as the most influential factor predicting behavioral intention to use AI, followed by cognitive strain and attention span. This finding underscores the stronger impact of psychological variables over ethical reasoning in influencing technology-related behaviors. Interestingly, ethical awareness did not significantly predict behavioral intention, suggesting a disconnect between individuals' moral understanding and their actual behavioral choices. Lastly, the application of the Theory of Planned Behavior (TPB) proved effective in explaining behavioural intention in the context of AI. However, the limited predictive power of ethical awareness points to the need for enhancing the influence of normative beliefs and motivational factors to bridge the gap between ethical cognition and behavior.

6.1 Recommendations

- Educational institutions should embed digital ethics and emotional intelligence modules within foundational and higher education curricula. This will cultivate critical thinking, ethical decision-making, and self-regulation among learners in the context of AI usage.
- Design targeted programs: for youth, emphasize attention span training and emotional resilience; for adults, focus on enhancing ethical judgment and responsible AI engagement, aligned with developmental and cognitive profiles.
- Mental health professionals and digital wellness coaches should offer workshops and resources that help individuals recognize symptoms of cognitive overload and emotional dependency caused by AI overuse, promoting balanced digital habits.
- Future studies should operationalize subjective norms and perceived behavioral control within the Theory of Planned Behavior to better predict ethical behavior in AI contexts, and pursue longitudinal research to assess the sustainability of behavioral changes.
- AI developers and designers should incorporate features that promote digital well-being, such as ethical nudges, usage reminders, and adaptive safeguards to prevent over-dependency.

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