

COGNITIVE TRANSFORMATION IN THE AGE OF AI: BEHAVIORAL SHIFTS AMONG UNIVERSITY STUDENTS

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Abstract

This study attempts to identify artificial intelligence and human relationships such as the social and psychological impact of AI on university student's behavior. Public and private sector universities were the part of this study. This study used a quantitative approach with a sample size of 120 participants. Data were collected through a Google questionnaire form. The validity and reliability of the research instrument were checked by obtaining expert opinions and collecting data from a few students. The data were analyzed using descriptive statistics. The summary of "Social and Psychological Impact of Artificial Intelligence on the Behaviour of University Students: An Explanatory Study" looks at how artificial intelligence (AI) affects social interactions, relationships, and mental health. The research considers both the good and bad effects of using AI in everyday life, especially in communication, emotional support, and social connections. AI tools like virtual helpers, chatbots, and social robots can improve human interactions by offering convenience and tailored experiences. However, they also bring up worries about becoming too dependent on them, feeling less connected emotionally, and losing real human connections. The study also highlights that using AI in communication can change how people think about each other, possibly lead to loneliness, and affect social interactions. It stresses the importance of thinking carefully about AI's place in human relationships and suggests using AI in a balanced and ethical way to support, not replace real human connections.

Keywords: Artificial Intelligence (AI), Social Interaction, Psychological Impact, AI Dependency, Communication Technology, Human-Machine Interaction, Social Robots, Human-AI Bonding, Technology and Isolation

Introduction

Artificial Intelligence (AI) has greatly influenced the human life, including how we interact with others and how we feel. As AI technology improves, it's being used more and more in everyday tasks, like virtual helpers such as Siri and Alexa, and advanced social robots that mimic human behavior. These technologies provide many advantages, like making things easier, improving communication, and offering emotional support. However, their increasing involvement in our relationships has led to important discussions about how they affect our social and mental health.

A big worry is how AI affects how people talk to each other. AI tools, like chatbots and virtual helpers, can help and sometimes even act as a middleman in conversations between people. Especially, AI is more and more used on social media and dating sites, helping to suggest friends or handle online chats (Tegmark, 2017). Even though these tools can make communication faster, there's a worry that they might make relationships less meaningful and more shallow (Turkle, 2011). Sherry Turkle, who studies how people interact with technology, warns that the ease of AI-based communication could mean less face-to-face talking and emotional connection, which might lead to feeling lonely and cut off from others.

Besides altering communication methods, AI also influences how we form emotional connections. Social robots, like those used in elderly care or therapy, can provide companionship and emotional support. These robots are made to simulate human emotions and reactions, which can help people feel connected, especially in situations where human interaction is limited (Broadbent, Stafford, & MacDonald, 2009). However, experts like Danaher (2020) warn that while AI can offer comfort, it cannot completely match the depth of human emotional bonds. Relying too heavily on AI for emotional support might lead to unrealistic expectations of machines and create emotional dependencies that could harm human-to-human relationships.

Additionally, AI has a big impact on mental health. On the good side, AI tools like mental health apps and AI-based chatbots for therapy give easy access to psychological help. These tools can offer quick help, guiding people through exercises like cognitive-behavioral therapy (CBT) or providing emotional support right away (Fitzpatrick, Darcy, & Vierhile, 2017). But, the long-term mental effects of using AI systems are still being studied. Some experts worry that too much interaction with AI might make people less connected to human emotions or reduce the value of empathy in human relationships (Borenstein & Arkin, 2017).

Another place where AI affects human relationships is at work. More and more, AI systems are being used in offices to handle tasks, boost productivity, and even help with hiring. While these changes have improved many industries, they also bring up worries about how AI might change how people interact at work. For example, as AI handles routine tasks, employees might feel like their jobs are less important or that they have less say in decisions, which could hurt their sense of purpose and their relationships with coworkers (Brynjolfsson & McAfee, 2014).

Research Objective:

The main goal of this research is to study and understand how Artificial Intelligence (AI) affects human relationships, both socially and emotionally, and how AI tools like virtual helpers, social robots, and AI-based social media systems change, moreover to know how people talk to each other, feel about each other, and how they feel in general. The ultimate aim is to see what human relationships might be like as AI becomes more common.

Research Questions:

1. How does Artificial Intelligence (AI) affect human relationships?
2. What do users believe about AI's effects on Mental health?
3. In what ways can AI positively contribute to human relationships?
4. How does AI help boost the human behavior of individuals?
5. What is the user's perception of individuals who excessively use AI often facing disorders?

Literature Review:

Artificial Intelligence (AI) is now more involved in education, affecting not just how teachers teach but also how university students behave socially and psychologically. AI tools, like intelligent tutoring systems, adaptive learning environments, and AI-powered administrative tools, are changing higher education by making learning more personalized and automating everyday tasks. As these systems become more common, their effects on students' social interactions, emotional health, and mental development are getting a lot of attention from researchers Holmes et al. (2019). One important topic is how AI influences students' social interactions. AI tools often help with personalized learning, which is good for academic success but can also mean less time interacting with classmates and teachers in person. Tsai and Men (2017) discovered that students using AI learning tools have fewer chances to work together, which could make it harder for them to connect with others in school. Additionally, Aoun (2017) pointed out that AI systems giving automatic feedback and lessons might reduce the deep conversations between students and teachers, which can weaken the close teacher-student relationship that helps with emotional and intellectual growth. On the other hand, Norvig and Russell (2020) stated that AI-powered platforms can encourage new ways of social learning, especially in online settings where students work together from different places. This shows that the social effects of AI are complicated and depend on the situation.

The impact of AI on university students' mental health has been a topic of much discussion, especially regarding the stress and anxiety caused by AI-based exams and grading. AI systems give immediate feedback and grades, which can create a lot of academic pressure because students feel they are always being judged without the usual understanding and empathy from human teachers. Fischer and colleagues (2018) found that students using AI grading systems felt more anxious, often because they missed the human touch and flexibility that teachers usually provide. This constant monitoring can also lead to burnout, as students feel they are always being watched. Despite these

concerns, AI has also been used positively to help students with their mental health. AI-powered chatbots and virtual counseling services have been created for this purpose. Fitzpatrick and others (2017) showed that AI chatbots, like Woebot, can successfully give cognitive behavioral therapy (CBT) to students. This provides quick and easy mental health support, helping students manage stress and anxiety better.

Besides affecting emotional health, AI also affects students' mental growth. AI can offer tailored learning experiences, which are known for improving critical thinking and problem-solving abilities. Kulik and Fletcher (2018) discovered that students using AI-supported learning tools had better mental skills than those using traditional teaching methods. These tools push students to their best level, encouraging more involvement and a better understanding of the subject. But, there are worries about students depending too much on AI for their studies. Lindh and Nolin (2020) proposed that automating tasks and using AI tools for problem-solving could make students less independent and less able to think critically. This happens because students get used to relying on AI-generated answers instead of figuring things out on their own. Relying too much on AI might slow down the development of skills needed for self-directed learning, which is important for success in both school and work Ma et al. (2024).

The ethical concerns about AI in education, especially related to privacy and monitoring, greatly influence students' mental health. AI tools in schools often keep track of many student activities, including study habits and personal information, which raises worries about data privacy. Zuboff (2019) pointed out that students often feel uneasy about how much their data is gathered and analyzed by AI, causing them to feel watched and less trusting of their school. This constant feeling of being monitored can increase anxiety and harm students' overall well-being.

The impact of AI on education goes beyond just individual students; it affects the entire educational system. The change from traditional human-led teaching to AI-based instruction affects not only teachers but also the way learning communities function. Luckin et al. (2016) pointed out that while AI can assist and improve learning, it should not take over the important role of human educators in mentoring, building social connections, and addressing students' emotional and psychological needs. The human aspect of education is crucial for creating well-rounded individuals, and despite its capabilities, AI cannot completely replace the personalized support that teachers provide.

Methodology:

The research examined how artificial intelligence (AI) affects university students' social and mental well-being. A quantitative methodology was used and 120 university students were taken as a population. Statistical software was used to analyze numerical data.

This approach seeks to explore the various effects of AI on university students, offering practical advice for teachers and decision-makers, and contributing to the ongoing discussion about AI's role in education and society.

Data Analysis:

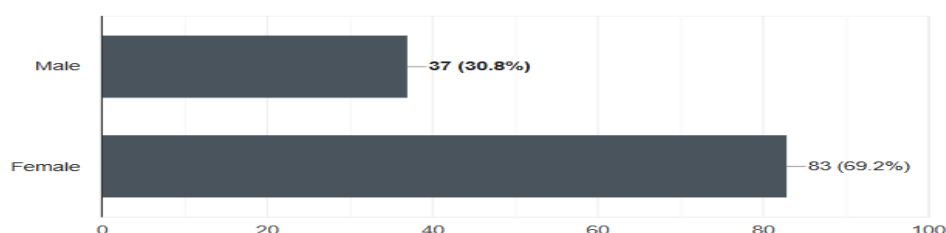
Responded Profiles: The respondents' profiles focused on gender, age, level of education, and field of study.

Table 1.

Gender of the respondents (N=120)

"Gender"	frequency	Percentage
1. Male	37	30.8
2. Female	83	69.2

Figure.1



Results from Table 1 on gender show that out of the 120 respondents who responded to the questionnaire 37(30.8%) were male while 86 (69.2%) were female.

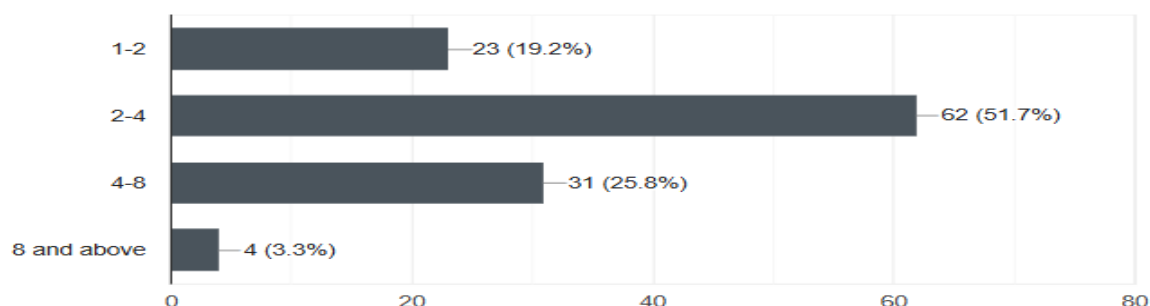
Table 2.

Age Group (N=120)

"Age Group"	frequency	Percentage
1. 18 -24 years	96	80
2. 24 -34 years	9	7.5
3. 35 -44 years	15	12.5
4. 45 – 54 years	0	0
5. 55 years and above	0	0

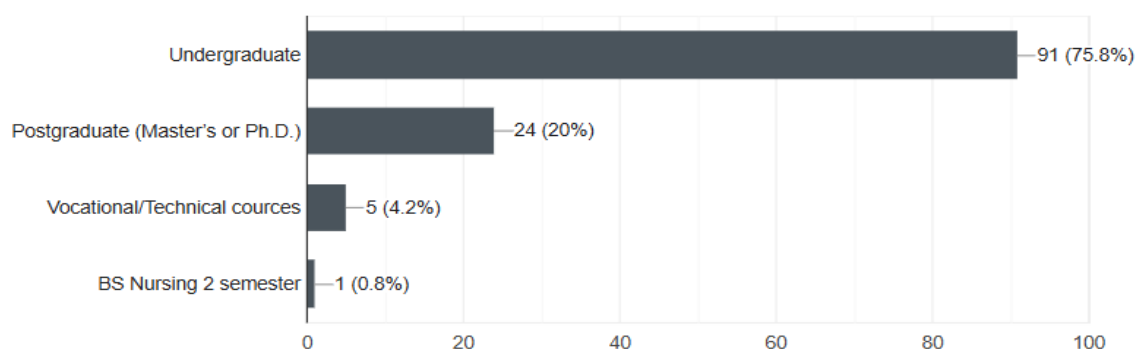
The age groups in Table 2 show that most people, 80%, are between 18 and 24 years old. The next biggest group, 12.5%, is between 35 and 44 years old. The smallest group, 7.5%, is between 24 and 34 years old.

Figure 3.



The number of sibling is not evenly spread out. Most people, 51.7%, have between 2 - 4 siblings. The next biggest group, 25.8%, has between 4 to 8 siblings. People with 1 to 2 siblings make up 19.2% of the group. The smallest group, just 3.3%, has 8 or more siblings.

Figure 4.



Current Level of Education (N=120)

Participants by their current education level shows that mostly undergraduate students, making up 75.8% of the total group. People studying for a postgraduate, masters, or Ph.D. degree make up 20%. While those taking vocational or technical courses are a smaller group, representing 4.2%.

Table 5.

Type of University/Institute (N=120)

"Type of University/Institute"	frequency	Percentage
1. Public Sector	54	45
2. Private Sector	67	55.8

Results from Table 5 on gender show that out of the 120 respondents who responded to the questionnaire 54 (45.0%) for Public Sector while 67(55.8%) were Private sector.

General Impact of AI on Human Relationships

Table 6.

"Impact of human relationships"	Strongly Disagree f (%)	Disagree f (%)	Neutral f (%)	Agree f (%)	Strongly Agree f (%)	M	SD
1. Communication Quality	12(10)	13(10.8)	26(21.7)	42(35)	33(27.5)	25.2	11.54
2. Emotional Connection	10(8.3)	26(21.7)	37(30.8)	32(26.7)	19(15.8)	24.8	9.54
3. Conflict Resolution	6(5)	22(18.3)	33(27.5)	49((40.8)	14(11.7)	24.8	15.03
4. Technology Dependency	6(5)	10(8.3)	18(15)	54(45)	41(34.2)	25.8	18.6
5. Privacy Concerns	11(9.2)	13(10.8)	25(20.8)	46(38.3)	30(25)	25	12.7

Key: SA- Strongly Agree, A-Agree- Neutral, DA-Disagree, SD- Strongly Disagree

The results show that people have mixed feelings about how AI affects their relationships. They appreciate AI's help with talking and solving problems, but they are worried about it making deep emotional connections or causing privacy issues and too much dependence. These thoughts remind us that we need to carefully balance using new technology with thinking about what's right and making sure people know how to use AI responsibly.

Table 7.

"AI can create meaningful connections"	frequency	Percentage
1. Strongly Agree	3	2.5
2. Agree	15	12.5
3. Neutral	32	26.7
4. Disagree	62	51.7
5. Strongly Disagree	9	7.5

About half (51.7%) of the people surveyed don't think AI can form meaningful connections. A good number (26.7%) are unsure, while only 12.5% agree that AI can create such connections. A small group (7.5%) strongly disagrees, and an even smaller group (2.5%) strongly agrees.

Table 8.

"AI technology has simplified or complicated the human relationship"	frequency	Percentage
1. Much Harder	11	9.2
2. Somewhat Harder	38	31.7
3. No Change	14	11.7
4. Somewhat Easier	43	35.8
5. Much Easier	19	15.8

The table "AI technology has simplified or complicated the human relationship" shows that people have different opinions about how AI affects ease of use. The biggest group (35.8%) thinks AI makes tasks a bit easier, many students find AI tools useful for making things more efficient and simpler. A good number (15.8%) also believe AI has made their lives much easier. But there are worries too, as 31.7% feel AI makes things a bit harder, possibly because of the need to learn how to use it, technical problems, or issues with AI's reliability. A smaller group (9.2%) thinks AI makes tasks much harder, possibly due to doubts or bad experiences with certain AI tools. Meanwhile, 11.7% say there's no change.

Table 9.

"AI to provide accurate information"	frequency	Percentage
1. Not at all	10	8.3
2. Not Much	10	8.3
3. Neutral	25	20.8
4. Somewhat	55	45.8
5. A great deal	27	22.5

The result shows that people generally trust AI to give correct information. However, the differences in how people see AI emphasize the need to help people use it wisely and make AI more dependable

AI and Mental Health

Table 10.

"How AI could affect mental health"	frequency	Percentage
1. Increased anxiety	20	16.7
2. Reduced social skills	41	34.2
3. Dependency on technology	60	50
4. Enhanced accessibility to mental health resources	17	14.2
5. It aids in effective problem-solving	25	20.8
6. It has no major effect	15	12.5
7. It improves emotional regulation	3	2.5

This study highlights the two sides of AI's effect on mental health: it provides helpful tools and resources, but it also has risks like becoming too dependent, feeling anxious, and having weaker social skills. We need smart ways to get the most benefits and reduce the negative effects.

Table 11.

"Does AI positively contribute to human relationships"	frequency	Percentage
1. Enhancing communication through language translation tools	57	47.5
2. Supporting long-distance relationships with interactive technologies	52	43.3

3. Assisting in mental health through virtual counseling	33	27.5
4. Improving work-life balance with productivity tools	52	43.3
5. Offering personalized support and companionship through chatbots	34	28.3

Table 11 indicates that the best use of AI, 47 % of responses is to use the language-translation tool and the second highest percentage is 43.3 of Supporting long-distance relationships with interactive technologies and Improving work-life balance with productivity tools. While the lowest percentage 27.5 is for Assisting in mental health through virtual counseling.

Table 12.

	<i>frequency</i>	<i>Percentage</i>
<i>“AI enhanced communication among individuals”</i>		
1. Significantly enhanced	25	20.8
2. Moderately enhanced	38	31.7
3. Slightly enhanced	39	32.5
4. No impact	12	10
5. Decreased communication	10	8.3

The information about how AI affects communication between people shows a wide range of views, indicating different levels of effectiveness. (32.5%) think that AI has made communication a little better. Just behind them, (31.7%) feel that AI has made communication quite a bit better. A smaller group (20.8%) think AI has greatly improved communication. Around 10% of those asked said AI hasn't changed communication at all. A small number (8.3%) believe that AI has actually made communication worse.

Table 13.

	<i>frequency</i>	<i>Percentage</i>
<i>“AI helps in forming new connections and friendships”</i>		
1. A great extent	28	23.3
2. A moderate extent	38	31.7
3. A little extent	30	25
4. Not at all	25	20.8

A majority of respondents (31.7%) think AI helps a fair amount in making new friends and connections. A good number (23.3%) believe AI is very helpful in forming these connections. About 25% of people think AI only helps a little in this area. Interestingly, 20.8% of respondents feel AI does not help at all in making new connections.

Positive Contributions of AI to Human Relationships

Table 14.

“Aspects of behavior”	Strongly Disagree <i>f (%)</i>	Disagree <i>f (%)</i>	Neutral <i>f (%)</i>	Agree <i>f (%)</i>	Strongly Agree <i>f (%)</i>	M	SD
1. Productivity and Organization	10(8.3)	13(10.8)	33(27.5)	45(35)	24(20)	25	12.92
2. Social Interaction Skills	6(5)	10(8.3)	30(25)	62(51.7)	15(12.5)	24.6	20.39

3. Empathy and Compassion	11(9.2)	13(10.8)	46(38.3)	40(33.3)	14(11.7)	24.8	15.01
4. Decision-Making	9(7.5)	6(5)	30(25)	54(45)	24(20)	24.6	17.22

Key: SA- Strongly Agree, A-Agree- Neutral, DA-Disagree, SD- Strongly Disagree

AI is generally seen as helpful for improving productivity, organization, decision-making, and social interaction skills. Most students agree on these benefits. However, opinions are more mixed when it comes to AI's effects on empathy and compassion. There is a lot of uncertainty and some disagreement, showing that people are not very confident that AI can improve emotional or interpersonal understanding. Large differences in opinions, especially in social interaction and decision-making, show that people have varied experiences with AI, and their views on it can be quite different.

Table 15.

“Behavior and personal growth”	Strongly Disagree f (%)	Disagree f (%)	Neutral f (%)	Agree f (%)	Strongly Agree f (%)	M	SD
Enhancing Productivity	10(8.3)	16(13.3)	40(33.3)	37(30.8)	23(19.2)	25.2	11.65
Supporting Emotional Well-being	9(7.5)	20(16.7)	46(38.3)	41(34.2)	8(6.7)	24.8	15.92
Offering Companionship or Social Support	5(4.2)	17(14.2)	40(33.3)	48(40)	12(10)	24.4	16.64
Encouraging Empathy or Emotional Skills	7(5.8)	22(18.3)	40(33.3)	42(35)	12(10)	24.6	14.25

Key: SA- Strongly Agree, A-Agree- Neutral, DA-Disagree, SD- Strongly Disagree

Boosting productivity is where AI consistently has a positive effect, with the least disagreement and a moderate average score. Neutral opinions are common when it comes to emotional well-being and social support, indicating uncertainty about fully trusting AI in these sensitive areas. There is significant doubt about AI's ability to promote empathy or emotional skills, raising concerns about its limitations in developing deeply human qualities. High variations in responses, particularly for emotional well-being and social support, show diverse experiences and views, likely shaped by individual interactions with AI tools.

Table 16.

“AI can boost helpful human behaviors such as kindness and empathy”	frequency	Percentage
1. To a large extent	16	13.3
2. To some extent	38	31.7
3. Neutral	34	28.3
4. little extent	24	20
5. Not at all	10	8.3

People have different opinions on whether AI can encourage positive actions in humans. Most people (31.7%) think AI can help a little. Some (28.3%) are not sure, while only 13.3% believe AI makes a big difference. A small group (20%) has other thoughts.

Excessive Use of AI and Mental Health Disorders

Table 17.

“AI positively impacts mental health”	Strongly Disagree f (%)	Disagree f (%)	Neutral f (%)	Agree f (%)	Strongly Agree f (%)	M	SD
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1. Provides Access to Counseling Resources	12(10)	8(6.7)	40(33.3)	41(34.2)	23(19.2)	24.8	13.73
2. Increases Awareness of Mental Health Issues	5(4.2)	14(11.7)	38(31.7)	56(46.7)	9(7.5)	24.4	19.52
3. Reduces Feelings of Loneliness with AI Companions	10(8.3)	21(17.5)	32(26.7)	47(39.2)	12(10)	24.4	13.72

Key: SA- Strongly Agree, A-Agree- Neutral, DA-Disagree, SD- Strongly Disagree

Artificial Intelligence (AI) is seen as a helpful tool for offering mental health support, and most people agree that it has positive effects in this area. The most widely recognized benefit is raising awareness about mental health issues, showing that AI is important for spreading information and starting conversations about mental health. While AI has the potential to help with loneliness, many people are unsure if it can fully replace human interaction. Responses are mixed across all three areas, which means people are using AI for mental health in different ways and to different degrees. The varying levels of experience and involvement with AI show that people have different opinions and uses for it.

Table 18.

“AI negatively impacts mental health”	Strongly Disagree f (%)	Disagree f (%)	Agree f (%)	Neutral f (%)	Agree f (%)	Strongly Agree f (%)	M	SD
1. Creates Dependence on Technology	6(5)	10(8.3)	44(36.7)	22(18.3)	44(36.7)	40(33.3)	24.4	15.36
2. Increases Feelings of Isolation	4(3.3)	13(10.9)	52(43.3)	38(31.7)	52(43.3)	18(15)	25	17.50
3. Increases anxiety due to the influence of social media algorithms	12(10)	15(12.5)	55(45.8)	25(20.8)	55(45.8)	17(14.2)	24.8	15.70
4. Reduces Real-World Social Skills	12(10)	9(7.5)	61(50.8)	19(15.8)	61(50.8)	21(17.5)	24.4	18.82

Key: SA- Strongly Agree, A-Agree- Neutral, DA-Disagree- Strongly Disagree

The results show that while AI offers many advantages, it also has the potential to harm mental health, so we need to handle it carefully. Encouraging people to set limits, promoting face-to-face social activities, and teaching them how to use AI wisely can help reduce these problems. Also, creating AI tools that improve, rather than replace, human relationships and emotional health could further ease these concerns.

Table 19.

“Mental health challenges”	frequency	Percentage
1. Anxiety	29	24.2
2. Depression	27	22.5
3. Social Isolation	44	36.7
4. Dependence and lack of autonomy	49	40.8
5. Lack of Real-World Social Interaction	64	53.3

The information about mental health problems shows that university students are dealing with several important issues because of how artificial intelligence (AI) affects their actions and relationships. The most common issue is not having enough real-life social interaction, which affects 53.3% of students. 40.8% of students say they rely too much on AI and feel less in control of their own lives. Social isolation affects 36.7% of students, while 24.2% experience anxiety, and 22.5% report feeling depressed.

Table 20.

	<i>frequency</i>	<i>Percentage</i>
<i>“Strategies to reduce AI-related stress ”</i>		
1. Setting Time Limits for AI Use	44	36.7
2. Engaging in More Real-World Social Activities	46	38.3
3. Using AI for Positive Purposes(e.g., productivity, learning)	61	50.8
4. Educating on Healthy AI Usage Habits	32	26.7

The most popular approach is using AI for good, like improving productivity and learning, which 50.8% of people picked. A large group (38.3%) wants to rely less on AI by spending more time with others in real life. About 36.7% set limits on how much they use AI, and the least common choice, made by 26.7%, is learning or teaching others how to use AI healthily.

Conclusion:

The study of the data shows that AI affects human relationships, mental health, and personal habits in two ways. First, AI helps with productivity, communication, and emotional health by improving language translation, supporting mental health counseling, and balancing work and personal life. However, there are worries about depending too much on AI, which could lead to weaker social skills, loneliness, and more stress. The different views on these issues show the importance of carefully incorporating AI into our daily lives.

The analysis AI boosts productivity and organization. Many people find AI useful for making new connections. Tools such as language translators and virtual counseling are considered helpful for improving communication and support. On the other hand relying too much on AI could limit our independence and real-life social interactions. People are still worried about AI's ability to form emotional connections and the risks to privacy. Many people feel anxious and have weaker social skills because they use AI too much.

Recommendations:

Encourage Setting Time Limits for AI Use: Advocate for establishing time limits on AI use to prevent excessive dependence. Promote education on maintaining a balanced approach to AI usage, ensuring that individuals use AI in a responsible manner.

Improve Real-Life Interactions: Create AI systems that support human relationships instead of taking their place. Promote involvement in in-person social events to reduce loneliness.

Create AI Tools that Encourage Empathy: Concentrate on making AI tools that strongly support empathy and emotional abilities, aiming to fill the gaps seen in emotional bonding and personal development.

Increase Awareness and Make AI More Accessible: Offer easy-to-understand training for students and workers to help them use AI to improve their work and learning, while also reducing any worries they might have.

Keep an Eye on AI's Long-Term Impact: Organizations should watch how AI affects people's mental health and offer support, like counseling and helpful classes, to keep everyone feeling good.

Use AI to Help People: AI can help in areas like mental health care and better education, especially for people who don't get much help now.

By handling these problems with a good plan, we can make the most of AI's benefits and reduce its downsides, leading to better human connections and mental health.

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