

**Identifying Topics Related to AI Chatbot Addiction on Social Media:
Comparing Manual and Automated Approaches**

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Use of AI

Claude AI was used to troubleshoot transformer compatibility issues, to debug code, and to refine code blocks during BERTopic model tuning steps (e.g., limiting topic counts, forcing unique keywords). AI was not used in the development of this project manuscript or presentation.

Executive Summary

Introduction: Access to and use of artificial intelligence (AI) chatbots has increased exponentially since 2022. For some people, use of these tools can become problematic or addictive, consuming many hours of the day and impacting functioning in other real-life settings. Social media could be leveraged to better understand self-reported experiences related to AI chatbot addiction, but the massive amount of data on these platforms exceeds the capacity for manual human review indicating the need for automated review approaches.

Methods: Qualitative content analysis was conducted on 365 posts from Reddit to identify themes related AI chatbot addiction including symptoms, mental health, motivations for use, and problematic AI features. Bivariate analyses were conducted to compare the prevalence of each theme in general AI versus AI recovery-related subreddits. Automated approaches including Latent Dirichlet Allocation (LDA) and BERTopic were used to identify topics in the same dataset. Topics identified in the manual approach versus the automated approaches were compared.

Results: Recovery-focused subreddits were more likely to mention using AI chatbots for entertainment, experiencing withdrawal symptoms, and having interest in quitting or reducing AI chatbot use. LDA methods surfaced 7 topics, many of which aligned with themes identified in the manual content analysis approach. Additional topics identified by LDA included sleep and physical health impairments. BERTopic methods surfaced 13 topics, however these topics were difficult to interpret or compare with the manual approach. Automated approaches greatly reduce the time needed relative to manual approaches (<3 hours vs 20 hours), however were not as clinically informed and included risk for spurious findings.

Discussion: Manual qualitative content analysis identified key self-reported symptoms related to AI chatbot addiction that align with established process and substance use disorder symptoms. Automated topic modeling approaches, especially LDA, have the potential to surface topics related to emerging public health concerns like AI chatbot addition and may expedite the identification of risks for manual review and intervention planning.

Introduction

With the release of ChatGPT and other advanced AI conversational agents (i.e., AI chatbots), mainstream access to and use of these tools has increased exponentially since 2022 (Andoh, 2026; Faverio & Sidoti, 2026). While intended to be used for productivity and problem-solving, individuals also turn to AI chatbots for social connection and support. AI chatbots are always available and the immediacy and personalization of responses, similar to feeds on social media, can drive uptake and sustained engagement (Zhang et al., 2026; Zhou & Zhang, 2022).

For some people, use of these tools can become problematic, consuming many hours of the day and impacting interest in or functioning in other real-life settings. Both media and academic literature sources have reported emerging findings on this topic, suggesting that some people using AI chatbots report feeling dependent on the tool, a compulsive drive to use the tool, and an inability to reduce or quit use (Huang et al, 2024; Huang & Huang, 2025; Riam et al., 2025). This discourse seems to mirror the language and experiences used to describe to other problematic technology use (e.g., social media, video games), process addictions (e.g., gambling, shopping), and substance use disorders (Zhang et al., 2026; Riam et al., 2025). However, little is yet known about the first-hand experiences of those struggling with AI chatbot addiction, what characteristics or use patterns elevate one's risk, and how this use may impact health and functional outcomes.

Reddit is a social media platform where people go to discuss emerging or stigmatized topics in a semi-anonymous way (Reddit, 2026). Dependence or "addiction" to AI chatbots is mentioned on this platform, with some subreddit communities dedicated specifically to discussing AI addiction symptoms and ways to reduce use. These data could be used to better understand these struggles and to identify which subreddit communities may be well-suited for potential outreach and intervention strategies. However, given the massive amount of social media data online and how rapidly language and technology evolves, it is not feasible for

humans to review all posts on a topic in a comprehensive or timely way. Automated approaches such as machine learning (ML) or natural language processing (NLP) may have promise in expediting review of such data at scale for rapid and timely insights to promote earlier identification and insights related to emerging public health issues, like AI chatbot addiction.

Therefore, the overall goal of this project is to identify themes related to AI chatbot addiction using both manual and automated approaches, to illustrate the relative strengths and limitations of each method to inform future proactive risk detection and/or outreach approaches. The following aims were completed:

- **Aim 1a:** Manual qualitative content analysis of Reddit posts to identify themes
- **Aim 1b:** Bivariate analyses to compare themes in general AI chatbot subreddits versus addiction focused subreddits
- **Aim 2a:** Automated approaches (Latent Dirichlet Allocation, BERTopic) to cluster topics within Reddit posts
- **Aim 2b:** Comparison of human-identified themes versus automatic approach-identified clusters

Data Sources and Preparation

This project used publicly available, post-level data from Reddit. Posts were collected from July to August 2025 using a multistep sampling approach to ensure comprehensive representation of types of posts and community discourse. First, a general search query in Reddit for “AI Chatbot Addiction” was done, results were sorted by relevance and restricted to the past year. Second two large AI related subreddits (>1M members) identified in the previous general Reddit query (i.e., r/ChatGPT, r/Character.AI) were searched using the word “addiction”, results were sorted by relevance and restricted to the past year. Third, two smaller subreddits focused on AI chatbot addiction (<2k members) identified in the previous general Reddit search (i.e., r/ChatbotAddiction, r/Character.AI.recovery) were sorted using the “Top” filter, and results were restricted to the past year. For each Reddit post, the following data were collected: post text, title text, subreddit name, and post URL (to allow for coding of any images/videos included). No usernames were collected to protect anonymity. Post text was copied manually

from Reddit into a CSV file. After removal of duplicates, a total of 365 posts were included in the final sample for analysis See **Figure 1** below for and overview of the communities sampled.

Methods

Aim 1a: Qualitative Content Analysis

To surface topics in the dataset using a manual approach, a qualitative content analysis was conducted (Hsieh and Shannon, 2005). This method uses inductive and deductive steps to develop and refine a codebook of themes, and counts are reported to illustrate the extent to which each theme is represented in the dataset. First, a subset of approximately 10% of posts (n=35) were reviewed and preliminary themes were identified. This organic surfacing of themes ensured the codebook structure was fit specifically to the discourse and dataset in this study. Second, a literature review was conducted to determine themes mentioned in previous research related to AI chatbot addiction and technology dependence (Huang et al, 2024; Huang & Huang, 2025; Kooli et al., 2025; Melodia et al., 2022; Nagata et al., 2025). This identified literature was then compared to the existing codebook themes, and any additionally identify themes that were not represented were added to the codebook. The final codebook used in this dataset included the following primary themes: 1) *Symptoms related to AI chatbot use*, 2) *Mentions of mental health*, 3) *Motivations for AI chatbot use*, 4) *Features of AI chatbots that could contribute to dependence*, 5) *Purpose of Reddit post*. Each primary theme contained secondary themes- see **Table 1** for additional details.

This finalized codebook was then used to review the full dataset. Posts were assigned a binary value for the presence of each respective primary theme (1= theme present, 0= theme not present). If a primary theme was selected, secondary themes were then reviewed for presence and assigned a binary value in a similar way. Descriptive frequencies and proportions were generated for each theme for use in Aim 1b quantitative analyses.

Aim 1b: Quantitative Bivariate Analysis

To better understand how themes related to addiction differed between general AI chatbot subreddits and recovery-related subreddits, a quantitative analysis approach was used. Because posts reporting first-hand experience were more likely to contain rich data on themes of interest (e.g., symptoms, mental health, motivations), we limited this analysis to first-hand experience posts (n=237). Descriptive counts were generated for each theme overall, by general AI chatbot subreddits (i.e., r/ChatGPT, r/Character.AI), and by recovery related subreddits (i.e., r/ChatbotAddiction, r/Character.AI.recovery). Bivariate analyses were conducted to determine which themes significantly differed by proportion between type of subreddit, using Chi-square and Fisher's exact tests as appropriate. P values less than 0.05 were considered statistically significant. Spyder within the Python environment was used for all Aim 1b analyses.

Aim 2a: Automated Approaches for Topic Modeling

Two automated approaches were used to surface topics within the full dataset of Reddit posts (n=365): Latent Dirichlet Allocation (LDA) and BERTopic. For both approaches, Spyder Version 8 within the Python environment was used (Raybaut, 2025).

Latent Dirichlet Allocation (LDA) is an unsupervised machine learning approach that uses a bag of words model to identify and cluster topics with a dataset (Blei, 2003). It uses keywords to aid in clustering without taking the order of words into account. Template LDA code was utilized from GitHub (GitHub, 2026a) an open-source online resource and refined in Spyder to analyze the post body text within this dataset.

BERTopic is a topic modeling approach that utilizes pre-trained transformer-based language models to surface embedded topics (Grootendorst, 2022). It takes not only keywords, but also larger phrases, sentiment, and the order of content into account. Template BERTopic code was utilized from GitHub (GitHub, 2026b) and refined in Spyder to analyze the post body text within this dataset. Note the BERTopic model used in this exploratory study was not zero-shot nor was it pre-trained to identify predefined topics (i.e., not a classifier model). This untrained and unsupervised approach with BERTopic was used to mimic and allow comparisons

of this approach with the organic nature of the manual codebook development and the LDA model output.

Aim 2b: Comparing Manual and Automated Approaches

After completing the previous aims, the manual and automated approaches were compared on the following metrics: 1) *Time to Complete*, 2) *Interpretability*, 3) *Clinically-Informed*, 4) *Level of Bias (i.e., subjective identification of topics in posts, drift in topic conceptualization over time)*, 5) *Level of Accuracy (i.e., identifying topics that are actually represented in post text)*.

Results

Aim 1a: Qualitative Content Analysis

A total of 328 posts (90%) mentioned symptoms or struggles related to AI chatbot addiction. Among these posts, the most common subtheme mentioned was an interest in quitting (61%, n=201), followed by spending too much time using or thinking about use (51%, n=166), feeling more and more dependent on the chatbot (37%, n=122), and feeling upset, irritable, or psychologically distressed if unable to use the chatbot (e.g., “withdrawal”; 35%, n=116). A total of 145 posts (40%) mentioned mental health, with loneliness as the most commonly mentioned concern (26%). A total of 283 posts (78%) mentioned motivations for use, with entertainment as the most commonly mentioned motivation (37%, n= 136) followed by escaping from problems (25%, n=90), and social connection (25%, n=91). Motivations related to using AI chatbots as an instrument (8%, n= 30), for intimate situations (8%, n=31), or for therapeutic support (5%, n=20) was much less common. A total of 201 posts (55%) mentioned problematic features of AI, including feeling a sense of emotional support, security, or safety with the chatbot (35%, n=126), the convenience and immediacy of responses (21% n=75), and feeling as though the chatbot is a real person or relationship (19%, n=71). The most common

purpose for posts included seeking advice (40%, n=145), sharing information about recovery successes or setbacks (37%, n=136), and venting frustration (23%, n=84).

Aim 1b: Quantitative Bivariate Analysis

Among posts with self-reported experiences of AI chatbot addiction (n=237), posts from recovery-related subreddits were more likely to mention psychological distress or feeling uncomfortable when they could not use the chatbot (e.g., “withdrawal; $p=0.003$) and wanting to quit or reduce their use ($p<0.0001$). Posts from recovery-related subreddits were more likely to mention entertainment as their motivation for using AI chatbots ($p=0.007$), relative to posts from general AI subreddits mentioned instrumental ($p<0.0001$) or therapeutic ($p=0.0046$) motivations for use. Posts from recovery-related subreddits were also more likely to be venting frustration ($p=0.0041$) or sharing information ($p=0.006$), driven by those users going to Reddit to share recovery setbacks, successes, tips for others, and screenshots to hold themselves accountable within these online communities.

Aim 2a: Automated Approaches for Topic Modeling

LDA models were run for five to ten topics respectively, and a seven-topic solution demonstrated optimal balance between model fit, perplexity score, and interpretability of topics. The topics surfaced using the LDA method are represented in **Table 3** and included: 1) Emotional Dependency & Loneliness, 2) Recovery and Breaking the Habit, 4) Productivity & Work Impact, 5) Mental Health and Anxiety, 6) Sleep and Physical Health Effects, 7) Identity & Self-Perception. Topics 1-5 all aligned showed significant overlap themes present in the manual content analysis approach as outlined in **Table 4**. Topics 6 *Sleep and Physical Health Effects* was not represented in the manual content analysis themes but is a common concern among recovery populations and should be considered. Topic 7 *Identity and Self-Perception* may have overlapped slightly with instances of self-stigma noted in the dataset, however most likely this topic was a spurious finding or hallucination in this keyword-based model as the word “character” was over-represented in the dataset.

BERTopic was used and initially generated 62 topics, which were relatively uninterpretable and not comparable to the manual approach themes. The model tuned to restrict cluster size and 13-topic solution, however the keywords and topics in this version still remained uninterpretable and contained many duplicate words between clusters (e.g., ChatGPT, character). Additional model tuning was conducted to restrict these duplicate words from being represented in multiple clusters and the 13-topics solution was retained however topic diversity and interpretability improved as shown in **Table 5**. Topics are shown in Table 4. Some topics with interpretable keywords included Topic 2 related to quitting and relapse, Topic 5 related to younger ages, Topic 8 related to talking and social interactions, Topic 9 related to time, Topic 10 related to feeling lonely or losing friends, and Topic 11 related to reading and writing fanfiction (a common alternative activity users mentioned when trying to quit AI chatbots).

Aim 2b: Comparing Manual and Automated Approaches

See **Table 6** for an overview of manual and automated approaches. *Time to Complete:* Overall, the manual qualitative content analysis approach took at least 20 hours to complete, whereas the automated approaches took 3 hours or less to complete (LDA= 1 hour; BERTopic= 3 hours) demonstrating the great potential for these automated approaches to expedite the review large-scale datasets for public health topics. *Interpretability:* LDA topics surfaced had excellent interpretability and overlap with the manual approach, whereas BERTopic required significant model tuning and topics surfaced using this approach had limited interpretability. *Clinically Informed:* The manual approach was built from the outset to be clinically informed, using both the domain knowledge of the reviewer as well as evidence-based themes from existing literature. The automatic approaches used in this study were not provided this domain knowledge and relied only on the text-based data provided. *Level of Bias:* Conversely, this access to only the text-based data may have mitigated potential for bias in the topics surfaced by the automated approaches relative to the manual approach, where the human reviewer could

subjectively choose topics of interest or topic definitions/labels could drift over time during the annotation process. *Level of Accuracy:* However, human manual qualitative coding may still be considered more accurate at identifying topics present in a dataset, particularly in rich, complex, and long-form datasets such as Reddit posts, as automated approaches have the potential for spurious findings or hallucinations (Mu et al., 2024).

Discussion

The findings of this study have significant implications for public health interventions as well as approaches used for public health surveillance. Self-reported experiences related to AI chatbot addiction have explored few academic studies (Namvarpour et al., 2026) but have been reported in media articles and appear to be an emerging topic within online communities on Reddit as show in this dataset. Symptoms identified demonstrate that those struggling with dependence feel similar withdrawal-like symptoms, compulsive need to use, loss of time, and functional impairments similar to other behavioral health or substance use disorders (Huang et al, 2024; Huang & Huang, 2025; Riam et al., 2025; Zhang et al., 2026). Over 60% of those who mentioned feeling addicted want to quit using AI chatbots or at least reduce their use. Entertainment and escaping from problems as motivations for use were mentioned most often in this dataset, and suggesting those who use for these reasons may be at greater risk for addiction. Mental health mentions were also common in 40% of posts, the majority of which mentioned loneliness which is an established risk for AI addiction in previous studies (Al-Obaydi & Pikhart, 2026; Nyakhar & Wang, 2025). Those who are isolated in this way, along with those who share perceived emotional support/security/safety with the AI chatbot (35%) may represent important groups for risk assessment and support. As interest in and access to AI chatbot tools increases, findings from this study could inform prevention and intervention approaches to support digital and mental health.

Bivariate analyses also indicated that users within recovery-related subreddits may represent a unique population that has already recognized their symptoms or struggles with AI

chatbot addiction and are taking steps to reduce or quit their use. The higher proportion of withdrawal-like symptoms in these communities suggest users may be actively trying to cut down and are experiencing uncomfortable or distressing internal states while trying to do so. At the same time, these users are often sharing their successes like days abstinent and screenshots of lower screen time as well as mentioning other coping skills or alternative leisure activities they are engaging in to replace AI chatbot use (e.g., talking to friends, writing fanfiction). This language and sharing to promote accountability or provide motivation to others shares similarities with other online recovery communities, including those for substance use disorders (Choi et al., 2026; Kasson et al., 2024). Future research could use a strengths-based approach in analyzing the discourse specifically within these recovery-focused communities, as such detailed lived experiences could be invaluable to inform approaches for early intervention or support among those struggling with AI chatbot addiction.

LDA methods appeared promising as an automated approach to surfacing topics within this Reddit dataset. Not only did the topics from this model closely align with those identified in the manual coding approach, LDA also required limited pre-processing of the dataset for analysis and topic generation once the code was established was rapid (e.g., within minutes). Notably, *Topic 6-Sleep and Physical Health Effects* from the LDA was not represented within the manual codebook as this topic occurred more often in the recovery-related subreddits that were coded after the manual codebook had already been established. However impacts to sleep and physical health (e.g., eating, hygiene, headaches) were mentioned and are also commonly reported as areas impacted by other behavioral health and substance use concerns (Oliva et al., 2026; Osbourne et al., 2022; Peltz et al., 2023), representing an important area to identify and incorporate into the codebook. Future studies could consider using LDA to initially surface topics from a large, complex dataset to highlight patterns for humans to consider and aid in the development of a manual codebook. While BERTopic did not perform as well during this study, this model is typically used for more classification or detection-type tasks rather than surfacing

topics not defined a priori. Therefore, future studies could potentially use the manual coding this study as a training dataset for BERTopic or other transformer-based or large-language models to identify the symptoms mentioned in this study in a larger way on social media.

Limitations

The findings of this study should be taken in context with several limitations. First, Reddit is a semi-anonymous platform and therefore no sociodemographic information was collected or able to be used in analyses. While several mentions of younger populations or youth-related language indicators (i.e., 13F, 19M, high school) were found throughout this dataset, future research should consider more specifically coding for the presence of this language or evaluating content on other social media platforms for which sociodemographic data are available. Second, the qualitative content analysis was conducted by a single coder rather than multiple coders, introducing bias and subjectivity as only one perspective was used to surface topics and provide binary presence/absence values. Future studies should consider incorporating at least two coders and evaluating interrater reliability to improve the rigor and consistency of themes. Third, posts did contain images including screenshots of screentime, comics, or AI outputs and these were able to be reviewed in the manual content analysis but not the text-based automated approaches, which may have limited comparisons between these approaches. Fourth, BERTopic is best suited to short excerpts (e.g., tweets, sentences) rather than multi-paragraph Reddit posts as was the format in this dataset, which may have impacted its utility and the interpretability of results in this exploratory study.

Conclusion

AI chatbot addiction seems to be an emerging concern among some individuals using these tools. Manual qualitative content analysis of Reddit posts identified key self-reported symptoms that align with established process and substance use disorder symptoms, and over 60% of posts mentioned a desire to reduce or quit their use. Posts on recovery-related subreddits were more likely to mention entertainment motivations, experiencing withdrawal-like

symptoms, and sharing information related to successes reducing use or venting frustration about setbacks. This rich content related to lived experiences could be used to inform outreach as well as prevention and intervention supports for those struggling with dependence.

Automated topic modeling approaches, especially LDA, have the potential to surface topics related to emerging public health concerns like AI chatbot addiction. Future research could leverage the strengths of both manual and automated approaches, potentially by using automated approaches to quickly surface topics for human verification or by using manually coded datasets as a gold-standard to train automated models to detect key symptoms or risk factors from social media at scale to expedite public health insights and impact.

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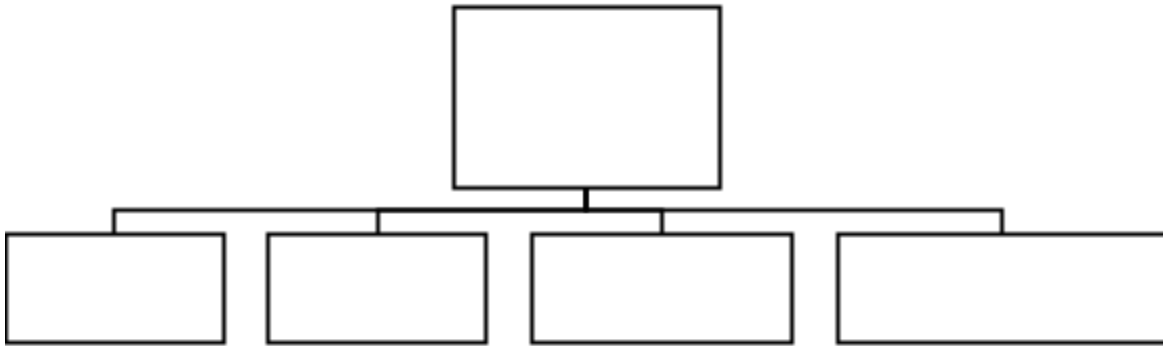


Figure 1. Reddit Manual Data Sampling Procedures

Table 1. Representation of Identified Topics from Manual Qualitative Content Analysis (n=365)

	n	%
Who is Post Focused On	365	100%
Original poster wanting help or sharing personal experience with AI	307	84%

Posting broadly on someone else/society's experience with AI	43	12%
Poster wanting help for or sharing loved one's experience with AI	17	5%
Symptoms Mentioned Due to AI Use	328	90%
Interest in Reducing Use / Quitting:		
I would like to decrease or stop my use of AI/chatbots.	201	55%
Loss of Time/Cognitive Preoccupation:		
I spend a lot of time thinking about AI/chatbots or planning my use of AI/chatbots.	166	45%
Compulsive Engagement/Unsuccessful Attempts to Limit Use:		
I've tried to use AI/chatbots less but I can't. Includes screenshots of screentime.	147	40%
Decrease in Cognitive Flexibility or Creativity:		
I feel the need to rely on AI/chatbots more and more.	122	33%
Psychological Distress [anxiety, irritability, restlessness]:		
I become stressed or upset if I am not allowed to use AI/chatbots.	116	32%
Functional Impairment:		
I use AI/chatbots so much that it has had a bad effect on my schoolwork or job.	91	25%
Emotional Dependence, Self-Medication:		
I use AI/chatbots so I can process or forget about my problems.	86	24%
Guilt/Shame:		
I experience feels of stigma about using AI or my dependence on AI.	86	24%
Loss of Interest:		
I feel less enjoyment towards other things, such as previous hobbies/goals.	62	17%
Mental Health and Wellbeing	145	40%
Loneliness, Isolation, Thwarted Belonging	94	26%
Depression, Anxiety, Neurodiverse	61	17%
Psychological Stressors or Traumatic Events	41	11%
Motivations for AI Chatbot Use	283	78%
Entertainment [using AI for entertainment activities and enjoyment]	136	37%
Social [using AI to find the sense of social connection and belonging]	91	25%
Escape [using AI to escape from daily problems]	90	25%
NSFW/Intimate Situations	31	8%
Instrument [using AI to search for information and gain knowledge]	30	8%
Therapy [using AI for therapeutic purposes]	20	5%
Features that Could Contribute to Dependence	201	55%
Perceived Emotional Support/Security/Safety	126	35%
Interactivity/Immediacy/Convenience	75	21%
Perceived Intelligence/ Sentience	71	19%
Purpose of Reddit Post	365	100%
Seeking Advice	145	40%
Sharing Advice/Successes	136	37%
Venting Frustration	84	23%

**Purpose of Reddit Post subthemes were mutually exclusive*

Table 2. Bivariate Analysis: Comparing Themes Across Subreddit Groups (n=237)

			General AI Chatbot Subreddits		Recovery-Focused Subreddits		
			(n = 98)		(n = 139)		
Symptoms of AI Chatbot Addiction							
Interest in Reducing Use / Quitting	15	57.0	35	35.7	119	85.6	<0.0001
	4	%		%		%	
Loss of Time/Cognitive Preoccupation	10	39.6	49	50.0	58	41.7	0.2594
	7	%		%		%	
Decrease in Cognitive Flexibility/Creativity	98	36.3	48	49.0	50	36.0	0.0617
		%		%		%	
Psychological Distress (anxiety, irritability, restlessness)	95	35.2	28	28.6	67	48.2	0.0037
		%		%		%	
Compulsive Engagement/Unsuccessful Attempts to Quit	86	31.9	29	29.6	57	41.0	0.0964
		%		%		%	
Emotional Dependence/Self-Medication	67	24.8	34	34.7	33	23.7	0.0896
		%		%		%	
Guilt/Shame	51	18.9	17	17.3	34	24.5	0.2494
		%		%		%	
Functional Impairment (school/work)	50	18.5	22	22.4	28	20.1	0.7897
		%		%		%	
Loss of Interest in Other Activities	38	14.1	20	20.4	18	12.9	0.1734
		%		%		%	
Mental Health Context							
Loneliness, Isolation, Thwarted Belonging	62	23.0	17	17.3	45	32.4	0.0146
		%		%		%	
Depression, Anxiety, or Neurodiversity	49	18.1	18	18.4	31	22.3	0.5661
		%		%		%	
Psychological Stressors or Traumatic Events	27	10.0	9	9.2%	18	12.9	0.4895
		%		%		%	
Motivations for AI Use							
Entertainment/Enjoyment	10	38.1	32	32.7	71	51.1	0.0073
	3	%		%		%	
Escape from Problems	79	29.3	27	27.6	52	37.4	0.1483
		%		%		%	
Social Connection	51	18.9	20	20.4	31	22.3	0.8502
		%		%		%	
Instrumental (Information/Knowledge)	16	5.9%	15	15.3	1	0.7%	<0.0001
		%		%		%	
Therapeutic Purposes	14	5.2%	11	11.2	3	2.2%	0.0046
		%		%		%	
NSFW/Intimate Situations	11	4.1%	2	2.0%	9	6.5%	0.1294
		%		%		%	
Features Contributing to Dependence							
Perceived Emotional Support/Security/Safety	79	29.3	36	36.7	43	30.9	0.4279
		%		%		%	
Perceived Intelligence/Sentience	49	18.1	19	19.4	30	21.6	0.8041
		%		%		%	

Interactivity/Immediacy/Convenience	45	16.7 %	25	25.5 %	20	14.4 %	0.0475
Purpose of Reddit Post							
Seeking Advice	80	29.6 %	56	57.1 %	24	17.3 %	<0.0001
Sharing Advice/Successes	10 5	38.9 %	30	30.6 %	75	54.0 %	0.0006
Venting Frustration	52	19.3 %	12	12.2 %	40	28.8 %	0.0041

Table 3. Topics (n=7) surfaced using Latent Dirichlet Allocation (LDA) approach

Topic #	Topic Label	Post Count	% of Posts	Avg Probability	Top Keywords (5)
Topic 1	Emotional Dependency & Loneliness	117	32.10%	0.651	like, ai, feel, just, ve
Topic 2	Recovery & Breaking the Habit	75	20.50%	0.7	ai, just, addiction, using, people
Topic 3	Romantic / Relationship Substitution	18	4.90%	0.668	people, chatgpt, gpt, think, just
Topic 4	Productivity & Work Impact	61	16.70%	0.663	ai, app, just, chatgpt, use
Topic 5	Mental Health & Anxiety	41	11.20%	0.633	ai, character, app, time, hours
Topic 6	Sleep & Physical Health Effects	22	6.00%	0.826	ai, porn, addicted, chatbot, addiction
Topic 7	Identity & Self-Perception	31	8.50%	0.815	ai, character, character ai, addiction, like

Note: Selected 7 Topic solution with perplexity score 592.45

Table 4. LDA topics compared to manual content analysis themes

Topic #	LDA Topic Label	Manual Content Analysis Themes
Topic 1	Emotional Dependency & Loneliness	Emotional Dependence, Self-Medication; Loneliness, Isolation, Thwarted Belonging
Topic 2	Recovery & Breaking the Habit	Compulsive Engagement/Unsuccessful Attempts to Limit Use; Interest in Reducing Use / Quitting
Topic 3	Romantic / Relationship Substitution	Social [using AI to find the sense of social connection and belonging]; NSFW/Intimate Situations; Perceived Intelligence/ Sentience; Perceived Emotional Support/Security/Safety
Topic 4	Productivity & Work Impact	Decrease in Cognitive Flexibility or Creativity; Functional Impairment; Instrument [using AI to search for information and gain knowledge]

Topic 5	Mental Health & Anxiety	Psychological Distress [anxiety, irritability, restlessness]; Mental Health and Wellbeing (Primary Theme); Psychological Stressors or Traumatic Events; Depression, Anxiety, Neurodiverse; Therapy [using AI for therapeutic purposes]
Topic 6	Sleep & Physical Health Effects	---
Topic 7	Identity & Self-Perception	Guilt/Shame

Table 5. Topics (n=13) surfaced using BERTopic approach

Topic ID	Post Count	% of Posts	Top 5 Keywords	Top 6-10 Keywords	Avg Probability
0	126	34.50%	chatting, addictive, roleplaying, advice, lonely	talk, chats, conversation, talking, quit	0.98
1	42	11.50%	chatgpt addiction, addicted chatgpt, therapy, therapist, chatgpt	anxiety, talking, talk, psychosis, addiction addicted	0.995
2	36	9.90%	getting addicted, addictive, hate app, deleted app, apps	trying quit, app, quit, lonely, relapse	0.888
3	27	7.40%	addicted app, relapses, quit, relapsed, decided quit	started app, struggling, dopamine, sleep, app	0.792
4	14	3.80%	chatgpt addiction, talking chatgpt, chatgpt, talk, talking	advice, emotionally, real human, comfort, honestly	0.925
5	13	3.60%	getting addicted, addictions, porn, mental health, apps	young, roleplay, behavior, mental, younger	0.978
6	12	3.30%	deleted account, delete account, finally deleted, deleting, deleted character	delete, deleted, account, character account, removed	0.946
7	11	3.00%	started chatting, chatting, quit, app, characterai	talking, deleted app, talking real, roleplaying, stop	0.918
8	10	2.70%	chatting, talking, talk, discussion, mental	mental health, social, human interaction, human, health	0.95
9	10	2.70%	daily, today, fun, week, tonight	started, weekly, tomorrow, rewatching, joy	0.986
10	9	2.50%	relapsed, quitting, deleted character, decided quit, quit	lonely, lost friends, finally deleted, lonely lost, deleted account	0.988
11	9	2.50%	fan fiction, writer, started writing, write, fiction	fanfiction, fanfics, reading, tumblr, read	0.959
12	7	1.90%	text, addictions, body, tiktok, unhealthy	cai	1

13 39 10.70
 %

Noise/outliers

Note: Topic Diversity 0.723

Table 6. Comparisons of Manual and Automated Approaches

	Manual Content Analysis	Automated LDA	Automated BERTopic
	20 Hours	1 Hour	3 Hours
Time to Complete	Codebook Development	Some Data Pre-Processing	Limited Data Pre-Processing
	Manual Review and Annotation of Each Post	Limited Model Tuning	Significant Model Tuning
Interpretability	HIGH	HIGH	LOW
Clinically Informed	HIGH	LOW	LOW
Reduced Level of Bias		X	X
Reduced Spurious Findings or Hallucinations	X		