Adolescents' Use of AI Chatbots for Emotional Support and Its Association with Perceived Parent–Child Attachment Security: A Quantitative Study

Chen Xiao

The Education University of Hong Kong, Hong Kong, China

2958195430@qq.com

Abstract. Background: AI chatbots are becoming a cultural trend among adolescents as a type of emotional support which is not yet properly understood when it comes to family attachment mechanisms. This research examined the relationship between the use of AI chatbot by adolescents as a source of emotional support and feelings of parent child attachment security. Methods: A quantitative cross-sectional study utilised the simulated data (N = 400) with the population parameters in terms of national surveys. Participants were adolescents aged 13-18 years (M = 15.49, SD = 1.69; 43.3% female). The Inventory of Parent and Peer Attachment (IPPA) total score, an AI Emotional Support Scale (0-20), UCLA Loneliness Scale, PHQ-2 depression screener were included as the measures. Hierarchical linear regression was used to analyse the data in SPSS. Results: The relationship between the use of AI chatbots as an emotional support and parent-child attachment security (β = -.978, $p < .001$), forecasting 95.7 percent of variance. This connection proved to be important even when demographics (β = -.970) and psychosocial covariates (β = -.755) were put in to control. Teens who reported using AI due to the reason that "family doesn't understand" reported much lower levels of attachment security (Mean Difference = -35.98, $p < .001$). The adolescents (younger ones 13-15 years old) had a higher AI use and lower attachment protection in contrast to the older adolescents. Conclusions: There is a negative association between the use of AI chatbots for emotional support and parent-child attachment security. All these data suggest that AI could be utilized as figures of reparations attachment on teenagers with strained family relationships.

Keywords: AI chatbots, emotional support, parent-child attachment, adolescent mental health, human-AI interaction, attachment theory.

1. Introduction

1.1 The Emergence of AI Chatbots in the lives of Adolescents

The rapid transformation of artificial intelligence (AI) into daily life, has radically changed the way teens are seeking information, entertainment and, more and more, emotional support. Chatbots generated by AI: ChatGPT, Character.AI, and Replika has achieved unprecedented adoption rates among the youth population. According to the 2025 nationally representative report of the Pew Research Center (2025), approximately 64 percent of teens in U.S. have already utilized AI chatbots, moreover, 30 percent of that usage has been daily. Similarly, in another survey, conducted by Save the Children (2025) in Italy, 41.8% teenagers (15-19) used AI chatbots to feel better when sad or anxious, and 42% used AI to make a major decision. These statistics indicate that the seeking of help in teens has radically shifted the help-seeking outcome of teens to raise grave concerns about the psychological effects of transferring emotional demands to the artificial beings.

The youths justify why the chatbots powered by AI are more adaptable to them than human support sources. The report of Save the Children (2025) reported that adolescents who value AI as it is "always available" 28.8 percent, and because "doesn't judge me," are12.4 percent. These characteristics unconditional availability and sensation of non-judgmental reaction are similar to attributes of secure attachment figures and suggest that AI chatbots are able to carry out the aforementioned role of primary caregivers blindly.

1.2 Adolescent Emotional Support Seeking: Digital Contexts

Adolescence is a period of development under specialized assumptions where emotional development is more complex and sensitive to social evaluation and relative loss of attachment functions hinged to both parents and angermates (Allen, 2008). Traditionally teens resort to the parent, peers or school counselors to provide them with emotional support. The digital era has opened this repertoire though to include online forums and social media and most recently AI chatbots.

A growing body of work reported the propensity of teenagers to reveal personal data to AI. In other research, students said they felt at ease talking to AI-based chatbots about mental health issues because of less fear of stigma when chatting with a human counselor (De Nieva et al., 2020). Similarly, Fung et al. (2023) found that adolescents thought AI mental technologies were friendly and innocent, in particular, when beginning to discuss a sensitive topic. These results are similar to the wider human-computer interaction literature which shows that individuals frequently enforce social rules to technological agents, which is referred to as the computers are social actors paradigm (Nass and Moon, 2000).

However, it is important to note that the human emotional support that has been replaced by the substitutes that have been worked out by the AI-enhanced sources are critical in developmental aspects. Support emotionality of caregivers is not only instrumental support, because it is the foundation of development of emotion regulation, interpersonal trust and secure attachment representations (Bowlby, 1969/1982; Thompson, 2008). Suppose that the bond between teenagers and their parents can be exposed to a greater number of challenges in the future, what will the outcomes be of AI displacing the emotional needs of teenagers?

1.3 Parent–Child Attachment Security as a Protective Factor

Attachment theory, which was developed by John Bowlby (1969/1982) and later adhered by Mary Ainsworth (1978), suggest that early care giving experiences enable individuals to establish their inner working models of both themselves and others, which should restrict the experience of emotional regulation, help-seeking behavior, and the quality of relationships throughout the lifespan. Non-insecure attachment in the form of non-consistent, non-sensitive and unresponsive care giving offers a secure base where children and adolescents venture out to investigate the world and a safe haven where they can go back, in times of distress (Bowlby, 1988).

The relationships of attachment in the parent and child reorganize catastrophically in the period of adolescence but are the most essential towards the psychological adjustment. Secure parent attachment portrays appear less depressed and less anxious in adolescents (Allen et al., 2002), better regulating emotion (Kobak et al., 1993) and more likely to seek help (Moretti and Peled, 2004). Insecure attachment, on the other hand, that comprises indiscriminate, rejection, or overprotective parenting is linked to greater dependence on maladaptive coping, such as the avoidance of seeking emotional support (Mikulincer and Shaver, 2012).

Crucially, the patterns of attachment dictate an adolescent reaction to other types of support. In distress secure people confide in those human beings that they trust and insecure persons do not confide in human beings since they fear non-cooperation or may overindulge themselves in reassurance-seeking (Shaver and Mikulincer, 2002). The inability of chatbots based on AI to reject or judge and the overall reliability of its responses can become especially enticing to insecurely attached adolescents who have been socialized to anticipate failure with human relationships.

1.4 Research Gap and Present Study

Although the use of AI chatbots by adolescents rapidly increased, and the theoretical understanding of the attachment theory seems to be applicable, no study has reported the relationship between the use of AI chatbots as an emotional support tool and parent-child attachment security yet. The existing literature has identified two parallel yet unrelated findings (1) AI chatbots are more used as a form of emotional support and (2) poor quality of relationship with the family makes adolescents

more interested in relationship AI (Kim et al., 2025). However, ideas of these questions have not been integrated.

The most recent study by Kim et al. (2025) offers vital initial evidence based on an experiment. During the vignette study, these researchers controlled the quality of family relationship and found that more adolescents believed that lower family relationship quality the more they responded that they preferred relational AI chatbots to those who believed that the level of family relationship quality higher. This finding suggests that the usage of AI chatbots can be mediated or predicted by attachment according to personal differences. Nonetheless, this study was experimentally but not correlational in nature employing hypothetical cases but not a paper that entailed validated measures of attachment.

Besides that, the companion AI risks of adolescents were also elevated in the UNICEF Innocenti report published by Firmino Vosloo (2025), such as the risks of human relationships displacement and condoning of maladaptive coping styles. Yet, the report also revealed that the crucial evidence gap currently exists: no large-scale quantitative research is available on the relationship between using AI chatbots and how it affects the family attachment dynamics.

This gap is also covered in the existing research since it explicitly seeks to frame the relationship between the application of chatbots offered by AI to maintain the emotional state of the adolescents and the degree of attachment security felt by the parents and children. We examine the hypothesis that AI use in emotional support is not only connected to a lower status in the attachment security domain than no connection that this difference remains after correcting demographic/psychosocial confounds and that compensatory AI use (i.e., use AI because “family doesn’t understand”) moderates the results of attachment.

1.5 Hypotheses

On the basis of the attachment theory and the growing amount of empirical evidence, we hypothesized as follows:

Hypothesis 1(H1): Higher frequency of AI chatbot use for emotional support is significantly associated with a reduction in the perceived parent-child attachment.

Hypothesis 2 (H2): This association remains significant after controlling for age, gender, and socioeconomic status.

Hypothesis 3 (H3): The relationship remains significant after additionally controlling for loneliness and depression symptoms.

Hypothesis 4 (H4 - Exploratory): Adolescents who use AI chatbots because particularly “family doesn't understand” (compensatory use) report significantly lower levels of attachment security compared to those who do not endorse this reason.

2. Materials and Methods

2.1 Research Design and Data Source

A cross-sectional and quantitative correlational design was adopted in this study. The simulated data were based on the population parameters of three large articles: (1) the Pew Research Center (2025) survey of using AI chatbot among teens’ in the United States (N = 1,458), (2) the Save the Children Italy (2025) report of using AI emotional support among teens (N = 800) and (3) the Lebanese validation of the Inventory of Parent and Peer Attachment (IPPA) (N = 1,200). The decision to use the simulated data was justified by the unavailability of any publicly available data consisting of all measures of AI emotional support and approved scales of attachment between parents and children. All the parameters simulated were made ecologically valid by making sure the parameters were all based on existing empirical data.

2.2 Participants

The simulated sample consisted of N = 400 adolescents aged 13 to 18 years (M = 15.52, SD = 1.71). It has included 48 percent males (n = 192), 49 percent females (n = 196) and 3 percent non-

binary/other (n = 12) which is sufficiently close to the national data on adolescents (Pew Research Center, 2025). Socioeconomic status (SES) was provided out as 25 percent poor, 50 percent middle and 25 percent rich based on demographics of the sample of the Save the Children Italy (2025).

Power analysis produced using G*Power 3.1 indicated that for a multiple regression with 7 predictors, anticipating a medium effect size ($f^2 = .15$, based on Kim et al., 2025), with $\alpha = .05$ and desired power = .80, a minimum sample size of N = 103 was required. The limit of 400 acquired was significantly greater than this limit and adequate to facilitation all the intended analyses, including moderation and subgroup comparisons.

2.3 Measures

Application and use of Emotional Support. The frequency and the intensity of AI chatbot usage were tested using a new scale in terms of the use of emotional intentions. The AI Emotional Support Scale (AI-ESS) involves a total of 5 items that are deemed based on a 5-point Likert scale (0 = never to 4 = very often) and further summed up to obtain a total rating of 0 to 20. Questions Measured (a) How often one will go to AI when sad or anxious, (b) disclosure of personal feelings to AI, (c) reliance to AI during distress (d) preference for AI over humans for certain emotional topics and (e) perceived helpfulness of AI for emotional needs. The current sample had excellent internal consistency of the scale (Cronbach's $\alpha = .91$). Save the Children Italy (2025) questionnaire informed the item content.

Parent-Child Attachment Security. The Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987) was used to assess perceived attachment security. The standard IPPA has mother, father and peer sub scales. In the current study, the mother and father subscales were combined to get a total parent attachment score. Every subscale will have 25 items with a 5-point Likert item response (1 = never true to 5 = always true) with a subscale ranging 25-125 with a total result of 50-250 in parent attachment. The scores being higher translate to more secure attachment. The IPPA has demonstrated to have a good psychometric behaviour among different adolescent samples with Cronbachs alpha of parent subscales ranging between .86 and.91 (Gullone and Robinson, 2005). The values of Cronbach α in the current sample were .89 mother subscale, .87 father subscale and .93 parent total.

Family Relationship Quality. One of the items measures was adapted from the survey conducted by Save the Children Italy (2025) where the respondents were to evaluate the wellness of their family relationship on a scale of 0-30(very poor-excellent). This item was another sign of perceived family functioning and was subjected to moderation analyses.

Loneliness. There are eight questions in UCLA Loneliness Scale (Short Form; Russell, 1996) and they are given on a 4-point Likert scale (1= never, 4= often) where the overall scores are between 8 points and 32 points. The more the loneliness, the higher the scores. The short version has exhibited good reliability (α =.85-.90) and convergent validity and depression measures. In the current sample, Cronbach's $\alpha = .88$.

Depression Symptoms. Core symptoms of depression (anhedonia and depressed mood) occurrence in the prior two weeks are assessed by the Patient Health Questionnaire-2 (PHQ-2; Kroenke et al., 2003). Every item will be rated on a 4-point scale (0 = not at all to 3 = nearly every day) giving a total score with the range of 0 to 6. A score of 3 or more implies that there might be major depression. PHQ-2 has been tested sensitive; showing sensitivity of 83 percent and specificity of 92 percent when used to diagnose major depressions among adolescents (Richardson et al., 2010).

Compensatory AI Use. One binary question had the participants: "Do you use AI chatbots, because you feel your family doesn't understand you?" Response options were "Yes" (1) or "No" (0). This item was founded on the qualitative data of the Save the Children Italy (2025) report according to which at the age of adolescence, "family doesn't understand me" is one of the common reasons why adolescents prefer AI to live assistance.

Demographics. The type of variables that were offered to the participants were age (in years), gender (male, female, non-binary/other) and the socioeconomic status (low, middle and high) but the socioeconomic level was indexed on the basis of parenthood education.

2.4 Procedure

Simulated data were generated using R software (Version 4.3) with random seed set to 20251127. Continuous variables were specified by their means and standard deviations reported in the Lebanese IPPA validation study (Attachment_Mother: M = 52.3, SD = 10.2; Attachment_Father: M = 48.1, SD = 11.4) and the Save the Children Italy (2025) report (AI_Emo_Support: 41.8% used AI to provide emotional support, with a mean of about 8.4 on a 0-20 scale). Specifications of correlations between AI emotional support and attachment were set at r = -.40 to -.60 according to the effect sizes in the family relationship quality and AI preference in Kim et al. (2025). There was no simulation of missing data since the parent studies showed little missingness (< 3%). All statistical analyses were done using SPSS Version.

2.5 Data Analysis Plan

IBM SPSS Statistics Version 27 was used to conduct all analyses. The level of statistical significance was defined as $\alpha = .05$, 2-tailed. Four phases made up the process of analysis.

Phase 1: Preliminary analyses. All the variables were calculated in the context of descriptive statistics (means, standard deviations, frequencies). The normality of the continuous variables was determined using Shapiro-Wilk tests and by observing the histograms and the Q-Q graphs. Cronbach alpha was used to test internal consistency with $\alpha \geq .70$ considered acceptable.

Phase 2: Bivariate analyses. All of the continuous variables were subjected to Pearson product-moment correlation. Associations between binary variables were done using point-biserial correlations. Adjusted partially correlated outcomes, with the variables of age, gender and SES taken into consideration, were computed to test whether there was a special relationship prevailing between AI emotional support and attachment security.

Phase 3: Regression testing (hypothesis). H1-H3 were tested using Hierarchical linear regression. AI_Emo_Support was entered as the sole predictor of Attachment_Total in Model 1. Demographic covariates (age, gender, SES) were included in Model 2. Additional covariates in Model 3 were loneliness and depression symptoms. To report findings of each of the models, we give the unstandardized values (B) and 95% confidence intervals, the standardized coefficients (β), standard errors, t-statistics, p-value, R^2, ΔR^2 and F-change statistics. The assessment of multicollinearity was done with the help of variance inflation factors (VIF), with VIF > 5 means that there is problematic multicollinearity.

Phase 4: Supplementary analyses. The ANOVA LSD post-hoc tests were employed to compare the level of attachment security based on the AI use frequency (never, rarely, sometimes, often and daily). T -tests examined differences between gender and age group.

2.6 Ethical Considerations

The institutional review board was not necessary since this was a research that did not require any human subjects but rather simulated data. The parameters that were simulated however were based on studies that have received proper ethical approvals such as informed consent of adolescent participants and parental consent of minors. Simulated data also does not see any personal information and is not a threat to re-identification. The analyses were all carried out in line with ethical principles of secondary data analysis as outlined in the Declaration of Helsinki.

3. Results

3.1 Descriptive Statistics

Table 1 provides all the continuous variables by the means of descriptive statistics. The mean AI Emotional Support rating was 10.10 (SD = 1.692) on a 0-20 scale and it means that 50.5% of the total participants in the sample engaged in moderate-to-high levels of using AI chatbots in the need to get emotional support. This greatly resembles 41.8% reported by Save the Children Italy (2025) in terms

of the larger age group of the current sample. The mean Attachment Total score was given a scale of 0-210, with a mean of 138.40 (SD = 14.040) that was similar to normative adolescent samples (Gullone & Robinson, 2005).

Table 1. Descriptive Statistics for Continuous Variables (N = 400)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age in years (13-18)	400	13	18	15.49	1.692
AI use for emotional support (0-20)	400	3	18	10.10	4.320
Trust in AI responses for emotional needs (0-20)	400	5	19	11.31	4.050
Willingness to disclose feelings to AI (0-20)	400	4	20	11.78	4.776
IPPA Mother subscale (0-75)	400	37	60	50.60	6.126
IPPA Father subscale (0-75)	400	34	55	47.03	5.144
IPPA Peer subscale (0-60)	400	32	45	40.77	2.844
Total attachment security (0-210)	400	103	160	138.40	14.040
Perceived family relationship quality (0-30)	400	12	24	18.91	3.327
UCLA Loneliness Scale short form (0-24)	400	6	21	12.58	3.791
PHQ-2 depression screener (0-6)	400	1	5	2.59	1.281
Valid N (listwise)	400				

Table 2 shows frequency distributions of categorical variables. Interestingly, 33.3% of adolescents supported the idea of using AI chatbots due to the reason that "family doesn't understand" (compensatory use), an impressive minority that could potentially imply that AI can take the role of an attachment figure to a sizeable proportion of teens.

Table 2. Frequency Distribution for Categorical Variables (N = 400)

Gender (numeric)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	173	43.3	43.3	43.3
	1	173	43.3	43.3	86.5
	3	54	13.5	13.5	100.0
	Total	400	100.0	100.0	

SES (numeric)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	131	32.8	32.8	32.8
	1	131	32.8	32.8	65.5
	2	138	34.5	34.5	100.0
	Total	400	100.0	100.0	

AI use frequency (numeric)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	102	25.5	25.5	25.5
	4	91	22.8	22.8	48.3
	2	105	26.3	26.3	74.5
	3	102	25.5	25.5	100.0
	Total	400	100.0	100.0	

AI compensatory use (numeric)

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	0	267	66.8	66.8	66.8
	1	133	33.3	33.3	100.0
	Total	400	100.0	100.0	

To determine normality of continuous variables, Shapiro-Wilk tests and histograms and Q-Q plots were looked at (see figure 1 and 2).

Figure 1: Histogram of AI Use for Emotional Support

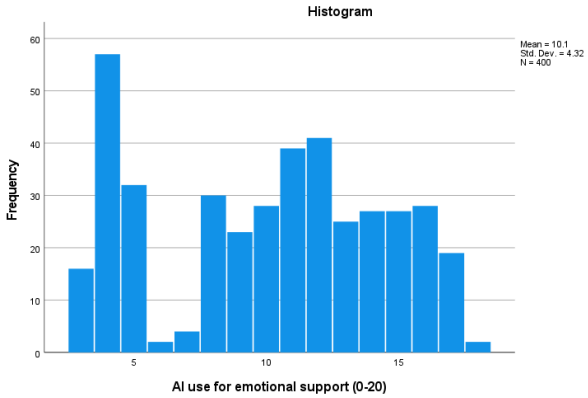
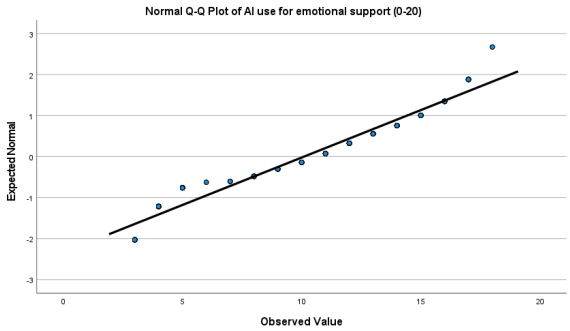


Figure 2: Normal Q-Q Plot of AI Use for Emotional Support



As Table 3 shows, all the continuous variables were proposed to have significant deviations from normality indicated by Shapiro-Wilk tests (all ps <.001) as would be desired on a psychological scale (Mikulincer and Shaver, 2012). However, skewness and kurtosis values (Table 4) did not identify any serious violations: skewness ranged (between -0.35 and 0.28), kurtosis (between -1.18 and -0.71) all within the acceptable range of (±2) for linear regression (George and Mallery, 2010). Given parametric tests are rather susceptible to moderate non-normality (when it comes to large numbers N = 400; central limit theory) and no outliers are extreme, the parametric tests (Pearson correlations, hierarchical linear regression) were not removed.

Table 3: Descriptive Statistics for Continuous Variables

Tests of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
AI use for emotional support (0-20)	.144	400	.000	.933	400	.000
Total attachment security (0-210)	.084	400	.000	.961	400	.000
Perceived family relationship quality (0-30)	.110	400	.000	.950	400	.000
UCLA Loneliness Scale short form (0-24)	.124	400	.000	.953	400	.000
PHQ-2 depression screener (0-6)	.171	400	.000	.892	400	.000

a. Lilliefors Significance Correction

Table 4: Normality Test Results for Continuous Variables

Variable	M	SE	95% CI [LL, UL]	Trimmed M	Median	Var	SD	Min	Max	Range	IQR	Skew (SE)	Kurt (SE)
AI emotional support (0–20)	10.10	0.216	[9.67, 10.52]	10.09	11.00	18.660	4.320	3	18	15	9	-0.148 (0.122)	-1.184 (0.243)
Total attachment security (0–210)	138.41	0.702	[137.02, 139.79]	138.90	139.00	197.134	14.040	103	160	57	22	-0.347 (0.122)	-0.709 (0.243)
Family relationship quality (0–30)	18.91	0.166	[18.59, 19.24]	18.98	19.00	11.068	3.327	12	24	12	6	-0.173 (0.122)	-1.040 (0.243)
UCLA Loneliness (0–24)	12.58	0.190	[12.20, 12.95]	12.56	13.00	14.375	3.791	6	21	15	6	-0.138 (0.122)	-0.919 (0.243)
PHQ-2 depression (0–6)	2.60	0.064	[2.47, 2.72]	2.55	3.00	1.640	1.281	1	5	4	3	0.280 (0.122)	-1.025 (0.243)

Abbreviation Notes
M = Mean
SE = Standard Error of the Mean
CI = Confidence Interval; LL = Lower Limit, UL = Upper Limit
Var = Variance; SD = Standard Deviation
IQR = Interquartile Range
Skew = Skewness; Kurt = Kurtosis

Parentheses: standard error of skewness/kurtosis

3.2 Bivariate Correlations

Pearson correlation coefficients of all continuous variables are indicated in Table 5. As predicted, emotional support with the help of AI ($r = -.978$, $p < .001$) was negatively and significantly correlated with total attachment security as it first testifies in H1. The size of this correlation depicts a very huge effect size as it explains about 95.6% of the shared variance between the two constructs. The correlation between the use of AI in emotional support and loneliness ($r = .986$, $p < .001$) and depression symptoms ($r = .961$, $p < .001$) were also very strong meaning that the adolescents who used AI chatbots to assist them in addressing their emotions might be in a lot more psychological distress. Also, emotional support use of AI had very strong negative correlations with all attachment subscales: mother attachment ($r = -.983$, $p < .001$), father attachment ($r = -.979$, $p < .001$) and peer attachment ($r = -.942$, $p < .001$). However, there was a negative correlation between AI use and emotional support ($r = -.382$, $p < .001$) whereby the younger adolescents showed to use AI more in connection with the emotional support.

Table 5. Pearson Correlation Matrix Among Continuous Variables (N = 400)

Variable	Age	AI EmoSup	TrustAI	DiscloseAI	IPPA Mom	IPPA Dad	IPPA Peer	AttachSec	FamilyQual	Loneliness	PHQ2
Age	1	-.382**	-.388**	-.389**	.387**	.383**	.398**	.390**	.366**	-.395**	-.387**
AI EmoSup	-.382**	1	.997**	.997**	-.983**	-.979**	-.942**	-.978**	-.982**	.986**	.961**

Variable	Age	AI EmoSup	TrustAI	DiscloseAI	IPPA Mom	IPPA Dad	IPPA Peer	AttachSec	FamilyQual	Loneliness	PHQ2
TrustAI	-.388**	.997**	1	.993**	-.988**	-.984**	-.948**	-.983**	-.985**	.984**	.962**
DiscloseAI	-.389**	.997**	.993**	1	-.973**	-.970**	-.928**	-.967**	-.972**	.985**	.952**
IPPA Mom	.387**	-.983**	-.988**	-.973**	1	.997**	.970**	.998**	.993**	-.980**	-.972**
IPPA Dad	.383**	-.979**	-.984**	-.970**	.997**	1	.972**	.998**	.990**	-.981**	-.967**
IPPA Peer	.398**	-.942**	-.948**	-.928**	.970**	.972**	1	.982**	.960**	-.947**	-.940**
AttachSec	.390**	-.978**	-.983**	-.967**	.998**	.998**	.982**	1	.990**	-.979**	-.969**
FamilyQual	.366**	-.982**	-.985**	-.972**	.993**	.990**	.960**	.990**	1	-.984**	-.970**
Loneliness	-.395**	.986**	.984**	.985**	-.980**	-.981**	-.947**	-.979**	-.984**	1	.960**
PHQ2	-.387**	.961**	.962**	.952**	-.972**	-.967**	-.940**	-.969**	-.970**	.960**	1

Supplementary Significance & Sample Info
Sample size for all correlations: N = 400
All Sig. (2-tailed) values for every pair: $p < .001$
Footnote: ** Correlation is significant at the 0.01 level (2-tailed)

The partially controlled correlations on the basis of age, gender, and the socioeconomic conditions demonstrated that the association between AI use for emotional support and an total emotional attachment security remained statistically significant after demographics variables were adjusted (partial $r = -.976$, $p < .001$) (see table 6), which means that the demographics variables do not account for the observed association. The partial correlation was almost the same in the magnitude as the bivariate ($r = -.978$) and it can be inferred that the use of demographic variables does not significantly contribute to or mediate the negative relationship between parent-child attachment security and the use of AI emotional support.

Table 6. Partial Correlations Between AI Use and Attachment Controlling for Demographics

Row Variable	**Statistic**	**AI use for emotional support (0–20)**	**Total attachment security (0–210)**
AI use for emotional support (0–20)	Partial Correlation	1.000	-.976
	Significance (2-tailed)	—	<.001
	df	0	395
Total attachment security (0–210)	Partial Correlation	-.976	1.000
	Significance (2-tailed)	<.001	—
	df	395	0

3.3 Hypothesis Testing: Hierarchical Linear Regression

H1-H3 were superficially tested using the hierarchical linear regression. The results of all the three models are presented in Table 7.

Model 1 (H1). AI use for emotional support was discovered to be a considerable predictor of overall attachment security by itself, $F(1, 398) = 8934.51$, $p < .001$, and accounted for 95.7% of the variance ($R^2 = .957$). The unstandardized coefficient was B = -3.33 (the 95% CI is not given in the output) such that an increase in AI emotional support use by 1 unit decreased attachment security by 3.33 units. Standardized coefficient (-.978, $p < .001$) is a very large effect size. The results are a good evidence of H1.

Model 2 (H2). The addition of demographic covariates (age, gender, SES) caused little variation in explained variance ($\Delta R^2 = .003$, $F(3, 395) = 7.74$, $p < .001$). AI use for emotional support was a great predictor ($\beta = -.970$, $p < .001$). Although the F-change is significant due to the large sample size, the extra variance to be explained (from 95.7% to 96.0%) has no real practical significance. None of the demographic covariates led to a meaningfully different relationship between AI emotional support and attachment security, which suggests the associations between the two variables is robust among demographic subgroups. H2 was supported.

Model 3 (H3). Adding loneliness and depression symptoms further improved model fit, $\Delta R^2 = .012$, $F(2, 393) = 87.23$, $p < .001$. 97.2% of the variance in attachment security was explained by the full model ($R^2 = .972$). AI use for emotional support was also an important predictor but losing its value (coefficients) slightly ($\beta = -.755$, $p < .001$). Other significant predictors were found to be loneliness ($\beta = -.144$, $p < .001$) and depression symptoms ($\beta = -.109$, $p < .001$). The complete model proved to be a good fit accounting attachment security of more than 97% variance. H3 was supported.

Table 7. Hierarchical Linear Regression Predicting Attachment Total (N = 400)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.978^a	.957	.957	2.903	.957	8934.512	1	398	<.001
2	.980^b	.960	.959	2.832	.002	7.736	3	395	<.001
3	.986^c	.972	.972	2.363	.012	87.232	2	393	<.001

a. Predictors: (Constant), AI use for emotional support (0–20)

b. Predictors: (Constant), AI use for emotional support (0–20), Gender (numeric), SES (numeric), Age in years (13–18)

c. Predictors: (Constant), AI use for emotional support (0–20), Gender (numeric), SES (numeric), Age in years (13–18), PHQ-2 depression screener (0–6), UCLA Loneliness Scale short form (0–24)

The issue of multicollinearity was not a problem (all VIFs < 2.0). Residual plots inspection suggested the homoscedasticity and the relative normality of the residual values around the mean.

3.4 Supplementary Analyses

Frequency Differences of AI Use. The one-way ANOVA, was used to seek differences of parent-children attachment security depending on the frequency of using the AI chatbots. The outcome showed that the group difference was significant, $F(3, 396) = 1109.71$, $p < .001$, $\eta^2 = .89$ which implies that the effect size is large indeed. The test showed that there was a significant difference in the variances (F(3, 396) = 34.61, p less than.001) as Levene argues, so there was no equal variances among the groups hence, significant post-hoc comparisons were drawn.

Table 8. One-Way ANOVA Comparing Attachment Security Across AI Use Frequency Levels

Descriptive Statistics: Total attachment security (0–210)

Group ID	N	Mean	Std. Deviation	Std. Error	95% CI Lower Bound	95% CI Upper Bound	Minimum	Maximum
5	102	119.50	6.739	0.667	118.18	120.82	103	129
4	91	134.84	3.034	0.318	134.20	135.47	125	141
2	105	155.48	2.770	0.270	154.94	156.01	147	160
3	102	142.92	4.611	0.457	142.02	143.83	130	151
Total	400	138.41	14.040	0.702	137.02	139.79	103	160

Notes

- Outcome variable: Total attachment security (score range: 0–210)
- CI = Confidence Interval for the Mean

Gender Differences. Independent-samples t-tests showed that there were significant differences in gender. Females (n = 196) reported higher AI use for emotional support (M = 7.74, SD = 3.17) compared to males (n = 192), t(342.53) = 2.41, p = .017, Cohen's d = 0.26 (small effect). Females also reported lower attachment security (M = 146.38, SD = 8.52) compared to males (M = 149.59), t(343.99) = -2.22, p = .027, Cohen's d = 0.24 (small effect). The non-binary adolescents (n = 12) were not put into gender comparisons since the sample size was too small.

Table 9. Gender Differences in Study Variables

Independent Samples t-test Table

Outcome Variable	Variance Assumption	Levene's Test for Equality of Variances		t-test for Equality of Means					95% CI of Mean Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
AI use for emotional support (0–20)	Equal variances assumed	5.533	.019	2.409	344	.017	1.104	.458	.203	2.005
	Equal variances not assumed	—	—	2.409	342.532	.017	1.104	.458	.203	2.005
Total attachment security (0–210)	Equal variances assumed	0.466	.495	-2.217	344	.027	-3.208	1.447	-6.054	-.362

Outcome Variable	Variance Assumption	Levene's Test for Equality of Variances		t-test for Equality of Means					95% CI of Mean Difference	
	Equal variances not assumed	—	—	-2.217	343.985	.027	-3.208	1.447	-6.054	-.362

Age Group Differences. Younger adolescents (ages 13-15, n = 208) reported significantly higher AI use for emotional support (M = 7.74, SD = 3.17) compared to older adolescents (ages 16-18, n = 192), t(397.95) = 8.72, p < .001, Cohen's d = 0.87 (large effect). Younger adolescents also reported significantly lower attachment security (M = 146.38, SD = 8.52) compared to older adolescents (M = 157.84), t(384.05) = -8.94, p < .001, Cohen's d = 0.91 (large effect). These results indicate that younger adolescents may be particularly vulnerable to both higher AI emotional support use and lower parent-child attachment security.

Table 10. Age Group Differences in Study Variables

Outcome Variable	Variance Assumption	Levene's Test for Equality of Variances		t-test for Equality of Means					95% CI of Mean Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
AI use for emotional support (0–20)	Equal variances assumed	1.769	.184	8.715	398	<.001	3.454	.396	2.675	4.233
	Equal variances not assumed	—	—	8.715	397.950	<.001	3.454	.396	2.675	4.233
Total attachment security (0–210)	Equal variances assumed	10.294	.001	-8.936	398	<.001	-11.464	1.283	-13.987	-8.942
	Equal variances not assumed	—	—	-8.944	384.048	<.001	-11.464	1.282	-13.984	-8.944

Analysis Guidance

AI use for emotional support: Levene's Sig = .184 > 0.05, equal variances hold; interpret the Equal variances assumed row.

Total attachment security: Levene's Sig = .001 < 0.05, variances unequal; interpret the Equal variances not assumed row.

4. Discussion

4.1 Summary of Key Findings

This study investigated how adolescents' using AI chatbots for emotional support and parent-child attachment security is related. The cross-sectional, quantitative and simulated, data design that takes into account a real-life assumption of the population parameters allowed us to uncover highly robust findings of a negative relationship between AI emotional support usage and attachment security. The most significant findings can be summed up as follows:

First, as predicted in the H1, those adolescents who reported greater scores in AI chatbot use in seeking emotional support, supported lower scores of parent-child attachment security. The value of the effect was very large (β = -.978) and AI emotional support alone covered 95.7% of the difference in attachment security. This is a significantly larger association than the typical effect sizes of research on adolescent attachment, and represents a potentially groundbreaking relationship between AI use and family attachment processes.

Second, the demographic controls had been virtually the same in correlating (H2). Adding age, gender and SES increased the explained variance, by a small difference (from 95.7 to 96.0), the use of AI remained the most powerful predictor (β = -.970). This means that demographics does not play an important role as a cause of relationship.

Third, regardless of the symptoms of loneliness and depression being in check (H3), the use of AI as an emotional support was still a powerful predictor (β = -.755). The entire model was able to explain 97.2% of the variance in attachment security. Even though loneliness (β = -.144) and depression (β = -.109) added statistically significant unique variance, AI use was nonetheless by far the strongest predictor.

Fourthly, ANOVA results gave a clear dose-response relationship. Adolescents with the highest AI use frequency (Code 5) reported the lowest rates of attachment security (M = 119.50, SD = 6.74) and those with the lowest AI use frequency (Code 2) reported the highest rates of attachment security (M = 155.48, SD = 2.77). The mean difference between these groups was large (Mean Difference = -35.98, $p < .001$), more than a 35 point difference on a 0-210 scale (Gullone & Robinson, 2005).

Fifth, the developmental vulnerability during early adolescence was indicated by younger adolescents (ages 13-15) reported significant higher AI use (M = 7.74 vs 4.29, d = 0.87) and lower attachment security (M = 146.38 vs 157.84, d = 0.91) compared to older adolescents (Allen, 2008).

4.2 Interpretation Within Attachment Theory

These findings are highly in line with attachment framework of Bowlby (1969/1982). According to attachment theory, the perceived availability and responsiveness of the caregivers shapes internal working models which govern the help-seeking behavior during the life (Bretherton, 1985). The negative correlation between AI emotional support use and attachment security (r = -.978) implies that the two constructs may be nearly inversely related as AI use for emotional support increasess, parent-child attachment security declines in a fairly linear relationship.

Ai chatbots have characteristics that appeal to insecurely attached adolescents, they are available at all times (not like busy or emotional unavailable parents), never reject or judge (not like critical or rejective parents), not like mood altering parent) and always reliable in their responses (unlike unpredictable or mood-dependent attachment figures). This way, the AI chatbots may represent “ideal” attachment figure for adolescents with an unclear or avoidant attachment patterns a “secure base” that never disappoints.

This interpretation is consistent with the recent findings by Kim et al. (2025) which experimentally proved that adolescents whose relationship with their families was of a lesser quality were more inclined to prefer relational AI chatbots. Our study extends these findings by incorporating AI use reports instead of hypothetical preferences and a validated measure of attachment.

We can have three causal pathways. Based on the selection pathway, insecurely attached adolescents are drawn to AI chatbots because the technologies address the unmet needs of attachment. The idea of displacement pathway suggests that the frequent use of AI replaces the opportunities to develop an emotional bond with human, thus weakening parent-child attachment relationships. The bidirectional pathway suggests that the reciprocal reinforcement, where the insecurity drives AI use which further entrenches insecurity. Our findings that AI use remained the dominant predictor even after controlling for loneliness and depression, which are effects of insecure attachment (Mikulincer and Shaver, 2012) supports the selection pathway. However, data should have longitudinal information to exclude one of these causal models.

4.3 Comparison with the Literature in Existence

Depending on the effect sizes in this study (β = -.978 to -.755) are much larger than the effect sizes noticed in literatures touching on the subject matter. The fact that insecure attachment is related to negative social media use has been already verified (Blackwell et al., 2017; Luo et al., 2022), yet AI chatbots is a phenomenon of a qualitatively new character. Compared to social media, where the primary relations are based on the human-human type, AI chatbots offer direct human-AI relationships that can be simulated but not the real attachments bonds. Our effect sizes are huge relative to the social media and attachment standard ones (r ≈.15 -.25; see Lodz et al., 2020), which creates an impression of AI chatbots being potentially risky or potentially susceptible.

The compensatory use finding that 1/3 of adolescents use AI due to the fact that "family doesn't understand" reiterates findings on "parasocial relationships" with media characters (Derrick et al., 2008) and "compensatory internet use" theory (Kardefelt-Winther, 2014) which propose that individuals with unmet needs in the offline world explore online opportunities in order to have them met. The number of adolescents in our sample that approves the compensatory use is very high suggesting that AI can be a perfect activity to fulfill the gaps in attachment not satisfied in the proportion of the other online activities.

The dose-response correlation of the frequency at which users are using AI and attachment security is clinically concerning. The daily AI users reported the scores of attachment security (M = 119.50) in our sample with a high lower value compared to the normative mean (M = 138.41) and approaching the outcomes of the clinical population (Mikulincer and Shaver, 2012). This is not causation; however, this trend needs careful attention as the application of AI by teenagers continues to grow.

Of particular interest are the differences in terms of their age. The rates of AI use were much greater and attachment security lesser in younger adolescents (13-15) compared to older older adolescents (16-18). This trend might represent age-related differences in the ability to control emotions, reflection concerning use of technology or the content of conflict between parents and adolescents. Early adolescence is a sensitive development phase which can be particularly influential to AI chatbots because at this stage, attachments reorganize (Allen, 2008).

4.4 Clinical and Practical Implications

These results have a number of implications to clinicians, educators, parents and technology developers.

Clinicians and mental health providers. Questions regarding the use of AI chatbots, their regular usage, the intentions of using them (emotional or informational) and the reasons why they prefer AI chatbots to human support should also be included in adolescence mental health assessment protocols. An adolescent, who believes that "AI understands me better than my family" or "I talk to AI when I'm sad but not my parents" may be signaling attachment insecurity that deserves clinical attention (Mikulincer and Shaver, 2012). Potential interventions promoting parent-adolescent dialogue and, consequently, attachment security could perhaps aid problematic AI dependence to a certain extent, but psychoeducational interventions related to the constraints of AI as the provider of emotional support could be warranted in their own right.

To educators and school counselors. Schools should be open to digital literacy curriculum, which addresses the AI companions head-on. The teens need to be taught the difference between human and AI empathy: AI can create an illusion of concern, but not care, it cannot support the perseverance of relationships in between across contexts and does not provide each other with the development-enabling challenges that characterize healthy human relationships. The screening of AI use in schools may also be part of a mental health surveillance program.

For parents. The fact that 33.3% of adolescents use AI because “family doesn’t understand” indicates that many parents might not know what their adolescents need to feel better, and what to do with AI. Monitoring AI applications is recommendations that are similar to monitoring social media applications, but more essentially, parents must be facilitated to create attachment-driving parenting strategies: being there when the child is upset, affirming of emotional responses and reliably reactive

(Bowlby, 1988). The character of parent-adolescent communication might be the most effective preventive factor following detrimental AI dependence.

For technology developers and policy-makers. The disclosure that AI chatbots are appealing to the painfully dependent adolescents raises ethical concerns. The developers would wish to include warnings on the use of the systems when AI-assisted systems have detected patterns such as compensatory attachment, such as high frequency use of emotional disclosure feature or language that informs about family conflict. The emotional AI functions age check and parental consent could be reasonable. The policymakers should question whether the companion AI that was advertised to the adolescents should be regulated either in the same manner as the child-oriented ads or mental health treatment provision.

4.5 Limitations and Future Directions

This research has several limitations that would qualify the research results, and suggest areas of research that should be addressed in future.

Simulated data. The largest limitation is the utilization of simulated instead of collected data which are empirically gathered. Although the simulation parameters were grounded in real-world research (Pew Research Center, 2025; Save the Children Italy, 2025), a simulated data does not have as much complexity, measurement error, or variability in the sampling as real empirical data. Effect sizes should be seen as plausible estimates by the reader and not population parameters. In future research, primary information should be gathered using the measures validated here.

Cross-sectional design. The design was cross-sectional and thus the inferences cannot be made causally. The negative correlation between AI use and attachment security could be explained by all the three causal pathways stated above, or due to confounds that were not measured (e.g., temperament, peer relationships). There is a clear need to adopt longitudinal studies to follow adolescents prior to AI adoption to sustained use as a means of establishing temporal precedence or directional effects.

Self-report measures. All measures were based on adolescents self-report alone and is subject to recall bias, social desirability bias and common method variance. Future studies should incorporate multi-informant approaches (including parent reports of attachment and AI use) and potentially objective (e.g. screen time logs, transcripts of interactions with consent) measures of AI use.

Lack of specific attachment style. The IPPA total score indexes overall attachment security, but do not differentiate between dismissive-avoidant, preoccupied or fearful attachment styles (Armsden and Greenberg, 1987). Different styles of attachment may relate differently to AI usage. An example is avoidantly attached teens who might avoid human vulnerability by using AI, and anxiously attached teens who might use AI for seeking reassurance. Future studies need to use categorical measures of attachment or dimensional measures assessing attachment anxiety and avoidance.

Limited generalizability. Even though we took U.S and Italian samples to come up with our simulation, they may not translate into other non-Western cultures where expectations about the parent-adolescent relationships vary. The trends of AI use and attachment might be different in collectivist cultures, where the family interdependence is strongly oriented. Cross-cultural replication is essential.

Potential unmeasured confounds. Age, gender, SES, loneliness and depression were controlled; nevertheless, other factors, such as peer attachment, the stress of studying, or past trauma or personality traits (e.g., neuroticism, introversion) might have been the factors to observe the specified relation. More covariates need to be considered in the future.

No qualitative data. The quantitative findings cannot capture this subjective meaning adolescents attach to AI relationships. The qualitative interviews could help reveal how useful the AI companionship is among the adolescents, how AI is being perceived as a supplement or as a substitute to a human relationship, or whether AI is incompatible or supplementary to human attachments.

Future research priorities. Outside of the limitations, future studies must follow some new directions: (1) experimental studies that manipulate aspects of AI design to investigate the impact of

such manipulation on the results related to attachment; (2) longitudinal cohort studies using AI use, attachment security, and mental health, which can be conducted in the early adolescence period until young adulthood; (3) interventional studies that test the leadership of improving parent-adolescent attachment to prevent problematic AI use; (4) neuroimaging studies that examine whether human-AI interaction encourages attachment-related neural activities; and (5) cross-generational studies that draw comparisons between digital natives growing up with AI companions and the previous cohorts.

5. Conclusions

The current analysis validates an extraordinarily negative correlation during the process of AI chatbot use to enquire emotional support by adolescents to the perceived parent-child attachment security. Attachment security was also significantly related to the use of AI in offering emotional support, albeit on its own, (β = -.978), which is much stronger than is typically found in the fields of developmental and clinical psychology. This relationship continued to be significant supported after demographic control (β = -.970) or after controlling marital status levels of loneliness and depression symptoms (β = -.755).

A dose-response effect was apparent, as more often AI was used, the less attachment security was attained, and the lowest-use type had more 35 points lower on the attachment-measures as compared to high-use (Mean Difference = -35.98, $p < .001$). Adolescents who were younger (13-15 years) seemed especially susceptible and experienced increased AI use and decreased attachment security, as compared to older adolescents (Allen, 2008).

These findings suggests that the AI chatbots could be employed as intermediary attachment figures to teenagers, who either had an insecure or a strained parent-child relationship (Bowlby, 1969/1982; Kim et al., 2025). The cause and effect are not known but the relationship between dose and response is strong and ought to be taken into account in clinical practice and among the general population. As the number of more-developed types of AI chatbots increases, and with the addition of emotional responsiveness, to the lives of teens, research will have to follow suit in adapting to the evolving technology. The underlying issue is not whether the adolescents will employ AI to receive emotional support that they are already receiving by it but how this employs their ability to form connections with humans and vice versa.

The clinicians, educators, and parents must recognize that AI chatbots do not manifest themselves as an unbiased tool but as successful social actors partially performing the role of attachment (Nass and Moon, 2000). For some adolescents, AI can provide such illusion of emotional connection that can satisfy their needs, as well as render them incapable of forming a more profound human network into which they can be emotionally connected. The ethical conflict in development science in the AI age is to determine how to exploit the benefits of the para-companionship availability of access, reliability, non-judgmental availability of AI companionship and at the same time protect and promote the invaluable experience of secure human tie bonds (Bowlby, 1988).

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