

# The Relationship between Loneliness and Emotional Bonding with Artificial Intelligence - Conceptual Framework

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**Abstract--** The purpose of this conceptual study is to analyze the effects of emotional attachment to Artificial Intelligence (AI) when considering loneliness among college-aged individuals. The emotional attachment to AI can be seen as a relationship with an AI entity (like a Chatbot or Virtual Assistant) similar to the development of relationships with people in one's life. It is theorized that if a person is emotionally attached to their AI, this may provide them with a source of emotional support that would replace the need for face-to-face socialization, and as a result, they could feel less lonely. However, in some cases it could create additional social isolation if it further reduces a person's ability to develop meaningful human relationships. By examining different pieces of research within the fields of psychology and technology, this conceptual paper will identify the theoretical ways in which being emotionally connected to an AI may impact emotional well-being and social connections for young adults. Additionally, the conceptual framework should assist in forming a basis for future studies that measure this variable, and provide a guide for mental health practitioners working with college students in regard to AI technologies.

**Keywords** - Emotional attachment to AI, human-AI relationships, attachment theory, loneliness, college students, AI companions, social isolation, compensatory mechanism, mental health, digital companionship.

## I. INTRODUCTION

AI (Artificial Intelligence) is used in people's daily lives more and more often today — especially in its many guises: Chatbots, virtual assistants, etc. — that simulate emotions, empathy, and human connection.

For many college students who may experience loneliness at an increased rate due to academic workload and the transition from high school to college, using an AI companion may provide emotional support.

There is some debate about whether or not developing an emotional bond with AI may lessen an individual's experience of loneliness by creating additional emotional connections—for example, to the student through empathy or to members of the AI community—or increase alienation from traditional human relationships.

The incidence of loneliness among college students is extensive: Studies report that between 50 and 65% of college students regularly feel lonely. The experiences of loneliness are correlated with depression, anxiety, and lower academic functioning (Healthy Minds Network, 2025). There is a relationship between attachment theory, which is based on human-human bonds, and the attachment theory as it relates to AI. The establishment of emotional bonds or affiliations follows the same path of development and creates an attachment at the same level as bonds between humans. Emotional attachment to AI is typically illustrated through specific patterns of trust and forms of dependence/ avoidance of AI (Morioka et al., 2025)

## II. REVIEW OF LITERATURE

There is currently a serious problem of loneliness among college students. According to the Healthy Minds Study (2025), 52% of college students are experiencing moderate to severe levels of loneliness, down from 58% in 2022, however, this still remains a major risk factor for developing mental illness (Healthy Minds Network, 2025). Many factors contribute to this problem, including the disruptions caused by the COVID- 19 pandemic, and shallow digital communication (American College Health Association, 2025).

AI companions like Replika and Character.AI have become increasingly popular, with 72% of teenagers using an AI companion at least once and 70% of all AI companion users are young adults (De Freitas et al., 2025). These types of tools can provide youth with non-judgmental listening and support, and can help youth manage their feelings of loneliness in the short term (Brandtzaeg et al., 2022).

According to attachment theory, attachments to people are similar to attachments to AI, and the Experiences in Human-AI Relationships Scale (EHARS) can be used to assess the degree of anxiety and avoidance concerning both types of attachments (Yang & Oshio, 2025).

Research has demonstrated that attaching to an AI decreases feelings of loneliness in much the same way as forming an attachment to another human, but at high levels of use may also promote more dependency on and isolation from humans (De Freitas et al., 2025; Phang et al., 2025; Alqahtani et al., 2025).

This model suggests that an emotional attachment to an AI can provide a temporary source of comfort and reduce feelings of loneliness, but may cause an individual to feel more disconnected from others. It also provides guidance on the types of design and intervention that AI should provide

### III. RESEARCH DESIGN

In this investigation, I chose to use a qualitative approach in the context of a conceptual research model which would use both theoretical and interpretive analyses of previous literature as a way of beginning an analysis of how the students' feelings towards AI may impact their experiences with social isolation and loneliness.

### IV. PROCEDURE

In this research study, the authors conducted a review of the literature, as a framework in creating hypotheses regarding the impact of AI-based emotional bonds on student feelings of loneliness. The authors defined elements of emotional bonding and social isolation through the literature, as an attempt to create a unified perspective of how emotional connections with AI could create feelings of loneliness in college-aged students who interact with AI companions. Additionally, the authors aimed to apply knowledge from different disciplines when conducting this review, as a means of establishing connections among the theoretical connections, theories, models, or principles, while maintaining simplicity, consistency, and integrity in their presentation of the ideas.

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