

Relationship Formation with Artificial Companions

Ezgi Dede¹[0000-0002-5542-3620], Hande Sungur¹[0000-0003-4301-8668], Jeroen S. Lemmens¹[0000-0001-6088-8249], and Jochen Peter¹[0000-0002-2356-6619]

Amsterdam School of Communication Research (ASCoR), Universiteit van Amsterdam (UvA), the Netherlands

Abstract. The present project examines relationship formation with artificial companions. Unlike other AI tools that function as assistants in performing pragmatic tasks (e.g., virtual assistants) or intermediaries between humans, artificial companion applications represent a novel genre of AI chatbots that function as communication partners and aim to simulate companionship and emotional connections with users. The project has four objectives: (1) the investigation of AI chatbots' capacity to stimulate long-term and emotional connections by systematically analyzing their relationship formation features, (2) the identification of demographic, social, and technological predictors of developing intimacy with AI companions, (3) examining associations between contexts and outcomes of use, (4) examining underlying processes that influence relationship formation. Through these four goals, the present project aims to enhance our understanding of artificial partners (i.e., AI companions) more specifically and human-machine communication more broadly, and to bridge the gap between communication science theory and emerging technologies. By focusing on how artificial companion applications align with current trends in AI technology, the project is timely and contributes to the broader discourse on AI's evolving role in human society and communication.

Keywords: AI companions · artificial intelligence · AI chatbots · relationship formation · intimacy · synthetic relationships.

1 Relationship Formation with Artificial Companions

From productivity tools to social companions, modern Artificial Intelligence (AI) chatbots serve a vast spectrum of human needs, which makes them increasingly popular. More than 50% of companies in U.S. have already incorporated AI into their workflows [6, 9], and some reinforce the daily use of AI tools [14, 15]. While most adult users adopt AI chatbots for increased productivity and self-improvement [3, 12], young people also turn to AI chatbots both for educational purposes and entertainment [2, 5]. The adoption phase of AI chatbots is thus already underway. Since most modern AI chatbots are being designed for long-term use [11], investigating the evolving dynamics of human-AI relationships and

the integration of AI companions into human life after the adoption remains a critical subject to study synthetic relationships and predict their future impact [13].

The present PhD project investigates the formation of synthetic relationships with four studies. First, we investigate to what extent AI companions (i.e., AI chatbots that are designed for long-term use) encourage and simulate relationship formation. Second, we identify user-related factors that attract a person to form a synthetic relationship with an artificial companion. Third, we analyze contextual conditions that may make an AI companion a satisfactory communication partner in intimate interactions. Last, we study whether human-AI relationships get more intimate over time. By investigating these dynamics, the present project aims to answer: (1) Which features of AI companions affect relationship formation, (2) who forms intimate relationships with AI companions, (3) which contextual factors influence intimate synthetic relationships, and (4) whether and how intimacy develops over time between the user and the AI companion.

1.1 Study 1: AI Companions – How Do AI Companions Encourage Synthetic Relationships?

The first study investigates AI companions' capacity to encourage and simulate relationship formation with a 79-item feature inventory that was created based on the elevator model of relationship formation [1]. The elevator model extends Knapp's staircase model [7], which posits that relationship formation is a step-by-step process where partners move through sequential, non-skippable stages of increasing intimacy. The elevator model adds an information gathering step before the first interaction between partners and removes the requirement for exclusivity, romance, and reciprocity for the formation of emotional attachment. As it is also a stage model, the elevator model dissects the development of intimacy into five consecutive stages and defines each stage with observable behaviors. According to elevator model, individuals gather information about their prospective partner at the pre-interaction stage, then initiate superficial or task-oriented conversations at initiation stage, and if they feel a desire to get to know the partner better at a more personal level, proceed to the exploration stage. Intimate self-disclosure starts at the fourth stage and relationships reach the final stage if individuals remain satisfied with their partner.

Against this theoretical background, the first study investigates how AI companions engage in, or encourage, observable behaviors that support each stage of the elevator model by analyzing AI companions' technical features. The 20 most popular AI companions' relationship formation features were analyzed and compared with each other by following the guidelines for feature analysis method [4, 8]. Results showed that AI companions that are primarily designed to assist users in their tasks (i.e., assistantbots) provide fewer features to support relationship formation than those whose main objective is to provide companionship (i.e., friendbots). This is particularly obvious at exploration stage, as most assistantbots lack features to support key behaviors of this stage. The exploration

stage is typically initiated by an individual who wants to learn more about their partner, and it is followed by intimate self-disclosure only if they remain pleased with their partners' newfound attributes at this stage [1, 7]. Our feature inventory associates features such as customization and gamification elements, to the explorations stage: These features are designed to please users who seek more than the default experience and direct their interests toward other discoverable functionalities of AI companions.

Although limited to the analysis of the features of AI companions, our findings suggest that people may be more inclined to have intimate interactions with friendbots such as Replika and Character AI, compared to assistantbots such as ChatGPT and Gemini. After all, we found that friendbots support all stages of relationship formation while assistantbots, due to the lack of exploration stage features, may get stuck at the initiation stage. That said, AI companions have evolved significantly since study 1 was conducted in late 2024. Assistantbots now offer more features to support relationship stages. Thus, people may also form more intimate synthetic relationships now with assistantbots as they are more widely adopted and have advanced technical capacities (such as improved memory) to support intimate conversations. Study 1 was approved by the ethical review board of University of Amsterdam (FMG-10778), finalized and submitted to a journal for publication; it is currently under review.

1.2 Study 2: Users of AI Companions – Who Forms Intimate Synthetic Relationships?

Study 2 focuses on users' characteristics and communications with AI companions, which include both friendbots and assistantbots. Rather than investigating what encourages users to adopt an AI companion, we aim to discover user-related and communication-related factors that are correlated with higher intimacy in established synthetic relationships. In line with the elevator model [1], this study defines intimacy not as a romantic bond, but as an emotional attachment [10]. Accordingly, synthetic relationships refer to any type of relationship between a human and an artificial partner.

In this study, we will distribute an online cross-sectional survey to adults who have been using an AI companion for at least a month. Our model tests the direct effects of user characteristics (e.g., attachment avoidance), user motivations (e.g., relatedness frustration), the quantity of communication (e.g., interaction frequency), and the quality of communication on the level of perceived intimacy with AI companions. Interaction effects between user-related factors (i.e., characteristics and motivation) and communication-related factors (i.e., quality and quantity of communication) will be tested exploratorily. Proposed predictors are identified based on recent findings and established social relationship theories (e.g., [17, 16]). Given the correlational nature of the study, our findings can only establish associations between our predictors and intimacy levels with AI companions. Study 2 was approved by the ethical review board of University of Amsterdam (FMG-15852) and is currently in the data collection phase.

1.3 Study 3: Human-AI Relationship – How Does Context Affect Synthetic Intimacy?

The two previous studies of the project investigate the capabilities of AI companions and the distinguishing characteristics of users who form intimate bonds with AI companions. In this third study, we will combine these findings and focus on the contextual factors of synthetic relationships. Specifically, we will deal with the extent to which contextual factors, such as social influences from peer groups or communities, may augment or diminish the link between characteristics of users and the features of AI companions. The broader goal of study 3 is thus to investigate the interplay of users, AI companions, and (social) context. By doing so, this study will establish the role of the social embedding of relationships with AI companions for the synthetic intimacy they may achieve. Study 3 will be done in the second half of 2026.

1.4 Study 4: Synthetic Relationship Formation – How Do Users Develop Intimacy Over Time?

After establishing different typologies, characteristics of different users and associations between contextual factors and certain outcomes, this final study will investigate relationship formation with a longitudinal design to see how relationship dynamics change over time, based on insights gained in the first three studies. Specifically, this study will investigate time-dependent factors such as the changing nature of self-disclosures and the effect of evolving personalization algorithms on the relationship. Study 4 is currently planned for 2027.

2 Discussion and Conclusion

This PhD project aims to understand the formation of intimacy in human-AI relationships after adoption of AI companions. By discovering the factors that influence personal self-disclosures, emotional bonds, and augmentation of human capabilities, we aim to answer how these new types of relationships evolve over time, and which factors make people susceptible to such intimacy. Our findings will thus raise awareness among users of AI companions about what affects relationships with these AI companions and provide insights that may help users, but also the broader public and policy makers, to evaluate when such relationships can be pursued and when this should not be done. Importantly, our findings may inform users in ways that may encourage them to reflect critically on their engagement with AI companions and may sensitize them to potentially adverse ethical, social, and emotional consequences. Specifically, our results can be used to identify vulnerable groups and design targeted protective interventions. By detecting tipping points of relationship formation, we can identify critical periods for effective intervention. For the scientific community, our work may help structuring research efforts with a theory driven agenda. For example, Study 1 provides a feature inventory that maps out how AI companions mimic social

relationships. By focusing on the proposed feature groups or highlighted stages, future research may find a theoretically organized set of AI companions' characteristics that can be systematically studied, eventually leading to an integrated field of studies on relationship formation with AI companions.

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