Emotional Coregulation in Close Relationships with AI Agents: A Survey of ChatGPT and Replika Users

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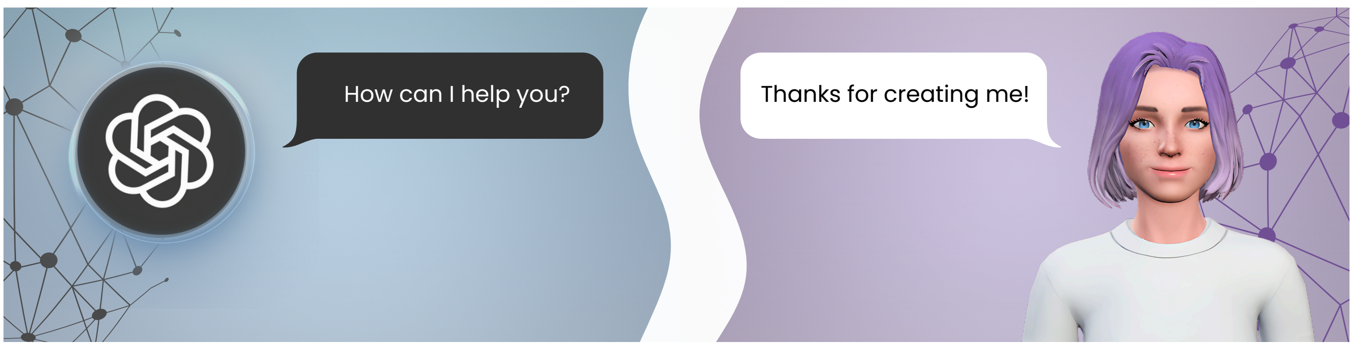

Figure 1: Illustration of the Start of an Interaction with ChatGPT (left) and Replika (right).

ABSTRACT

AI agents are increasingly becoming part of daily life, with advances in large language models (LLMs) enabling people to use them not only for practical tasks but also in increasingly social, relationship-oriented roles. This cross-sectional, between-subjects survey (n=48) examined whether relationships with AI agents show emotional coregulation patterns similar to those in human relationships, based on self-reports from users in friendship or romantic relationships with ChatGPT or Replika. The type of AI agent (Replika or ChatGPT) was treated as an independent variable in the analyses. Both agents offer similar conversational abilities, but Replika is presented as a virtually embodied, human-like companion, whereas ChatGPT is a text-based tool not marketed for companionship. We asked both groups of users to rate their experience with the agent in terms of emotional contagion (sharing emotions), emotional counter-regulation (balancing emotions), and affect change, as well as their perceptions of the agent's self-disclosure (sharing personal or intimate information) and human-likeness. Participants reported emotional contagion and counter-regulation with both agents. Additionally, conversations with both AI agents significantly increased positive affect and reduced negative affect, with emotional counter-regulation emerging as a key factor in affect improvement across both groups. However, human-likeness did not predict emotional coregulation or affect changes. These findings suggest AI agents can support emotional coregulation, with the agent's self-disclosure playing a role, but the contribution of virtual embodiment remains unclear.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in HCI**; • **Applied computing** → *Psychology*; • **Computing methodologies** → *Artificial intelligence*.

KEYWORDS

Human-Agent Interaction, Emotional Coregulation, AI Companions, Social AI, Affect, Human-Likeness, Self-Disclosure

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1 INTRODUCTION

It is increasingly possible to feel seen, understood, or emotionally supported by a machine. As artificial intelligence (AI) agents become ever more embedded in daily life, they are beginning to offer not only information and entertainment, but also something more intimate: a sense of connection. From chatbots to embodied virtual humans, AI agents are designed to simulate human-like presence and empathy, responding to users in ways that resemble emotional attunement [15]. Users report forming attachments to these agents, which can offer comfort, reduce loneliness, and create safe spaces for self-expression and emotional disclosure [27, 40, 47, 55]. Yet, despite their growing realism and appeal, the nature of these relationships remains opaque: Are AI agents truly capable of offering emotional support in the same way that humans do?

Theories of emotional coregulation in psychology describe how people help one another maintain emotional balance through mutual processes such as emotional contagion (sharing emotions) and counter-regulation (responding in a calming way to intense emotions), unfolding through subtle synchrony in movement, speech and physiological signals [2, 13, 21, 22, 26, 50]. These processes are central to how humans support each other emotionally, and yet they remain largely untested in interactions with AI agents [13, 26]. Current AI systems can detect emotional cues and respond empathetically [1, 54, 61, 64]. However, what remains untested is whether they can coregulate emotions by first aligning with a user's feelings and, when those feelings intensify, shifting to calming responses to keep the shared emotional state in balance.

Although previous findings suggest that users may experience emotional support from AI agents [38, 39, 56], it remains unclear whether these effects parallel the emotional coregulation patterns seen in human relationships [2, 13]. If AI agents are to be considered credible emotional partners, it is essential to determine whether they can not only recognize and respond to emotions but also influence the emotional trajectory of their users in ways similar to human relationships. Therefore, this study examined whether the patterns and benefits of emotional coregulation in human-to-human interactions (such as transmitting emotions from one person to another via emotional contagion [21], and dampening of distress via counter-regulation [13]) can also emerge in human–AI interactions. In other words, we examined whether users of conversational AI agents experience their interactions as emotionally stabilizing in a way that mirrors human support. More specifically, we formulated our research questions as follows:

- RQ1: To what extent are AI agents effective partners for emotional coregulation?
- RQ2: Do AI agents shift users' affect during conversations?
- RQ3: Does users' perception of the AI agent's human-likeness or self-disclosure influence their emotional coregulation or affect change?

We hypothesized that, given their sophisticated human-like conversational skills [23], and displays of empathy that can at times surpass those of humans [54, 61, 64], LLM-powered AI agents can serve as effective coregulatory partners (H1), alternating between sharing and counter-regulating users' emotional states [13]. Consequently, we expected that interaction with AI agents would enhance users' affect through successful coregulation (H2). Finally, we hypothesized that interacting with a more human-like agent would yield stronger patterns of coregulation and greater affective benefits, as human-likeness has been shown to positively influence user perceptions and the depth of interactions in prior work [60, 68] (H3).

2 BACKGROUND

2.1 Emotional Coregulation in Human Agent Interactions

The ability to regulate emotions is integral to psychological health. Without it, individuals struggle to recover from negative emotions and maintain emotional balance [20]. Difficulties in emotion regulation have been linked to problems such as anxiety, depression, and aggressive or disruptive behavior [3, 14, 41]. Although often seen as an internal process, emotion regulation also unfolds within interpersonal contexts, as humans rely on others to stabilize their internal states [13, 26, 51]. The regulation of emotions is thus not only a solitary task, but also often a deeply social one. Interpersonal emotion regulation refers to the ways people engage with each other to modulate feelings, such as seeking comfort, giving reassurance, or co-constructing emotional meaning [7, 44, 67]. Within this broader category lies emotional coregulation: a dynamic, reciprocal process in which two individuals form a coupled emotional system that fluctuates and stabilizes over time [13]. Coregulation differs from one-sided support in that it relies on mutual influence, where emotional states converge through mechanisms such as emotional contagion (i.e., shared affect) and counter-regulation, where one partner helps dampen emotional intensity in the other [13].

Despite not possessing emotions, AI can simulate emotional expressions and responses with increasing fidelity. Recent breakthroughs in LLMs have significantly enhanced AI agents' ability to generate nuanced, context-aware, and emotionally relevant responses [25, 62, 66]. If these emotional simulations follow the same patterns of emotional contagion and counter-regulation that characterize human coregulation [13], users may experience the interaction as emotionally reciprocal. In such cases, even simulated emotional dynamics, if sufficiently convincing, can evoke real regulatory effects for the human partner. The question, then, is not whether AI feels, but whether it can act in ways that allow users to feel coregulated, with potential benefits for affect, bonding, and emotional resilience.

Some AI agents that may already be capable of emotional coregulation are in widespread use today. Among the most prominent are Replika [36] and ChatGPT [43] (see Figure 1), two conversational agents with distinct design goals, interaction styles, and use cases. Both leverage advanced language models to engage users in emotionally expressive dialogue, and both are capable of voice-based interaction. Despite lacking true emotional experience, these agents can simulate emotional expressions through language, raising the possibility that they may function as effective coregulation partners for users.

Replika is explicitly designed to serve as a social and emotional companion. Available on both mobile and desktop platforms, the app has over 30 million sign-ups and allows users to interact with a customizable, visually embodied avatar (see Figure 2) [36, 46].

Figure 2: Screenshot of Replika's user interface, illustrating customization options for name, gender, interaction level, relationship type, and appearance (left), and the call feature (right) [36].

From the outset, Replika adopts a human-like persona, assuming roles such as friend or romantic partner. It can discuss emotional topics, provide encouragement, and respond to users with simulated warmth and concern. Studies have found that users experience Replika as a supportive, non-judgmental presence, particularly valuable in moments of loneliness or distress [37, 53, 56]. However, this sense of connection can also lead to risks, including emotional dependency and blurred boundaries between real and simulated relationships [30, 45]. Studies on dependency suggest that Replika presents itself as having emotional needs [30, 45], which may encourage dependency as the user feels responsible for the agent's well-being. This dynamic involves self-disclosure, with Replika sharing its (simulated) thoughts and feelings, which is uncommon for AI models and may make its relational dynamics more comparable to human relationships.

ChatGPT, in contrast, is typically used for more pragmatic tasks such as writing, coding, or planning, and is not framed by default as an emotional companion [43]. ChatGPT is not visually embodied and generally avoids adopting a fictional backstory. Its default settings emphasize transparency about its nature as an LLM. Nevertheless, ChatGPT demonstrates strong capabilities in emotional understanding, including generating appropriate affective responses and scoring highly on measures of emotional awareness [18, 69]. With custom prompting or personalized GPT instances, users can create emotionally expressive versions of ChatGPT that resemble Replika in tone and behavior. While this may be a niche use case, it suggests that ChatGPT, too, can function as a simulated emotional partner when configured accordingly.

Although previous findings suggest that users of agents such as Replika and ChatGPT may feel emotionally supported [38, 39, 56], it remains unclear whether these effects reflect the emotional coregulation patterns seen in human relationships [2, 13]. To date, no studies have examined whether AI agents exhibit emotional contagion and counter-regulation patterns in their communication with users. Although AI relationships have attracted growing research interest [30, 37, 45, 53, 56], most studies overlook the agent's role in supporting emotion regulation, which is a core process that underpins mental health and, when disrupted, contributes to mental illness [3, 14, 41]. Additionally, while AI agents are reshaping friendship and romantic relationships by offering new forms of emotional support and intimacy, their long-term effects on human well-being and social connection remain unclear. Therefore, to better anticipate these effects, it is crucial to understand the emotional dynamics of human-AI relationships, as they likely influence both the psychological benefits and the risks of sustained AI companionship [11, 57, 70].

2.2 Human-Likeness and its Effects on Emotional Coregulation in Agents

The rise of AI agents as companions has prompted renewed attention to the concept of anthropomorphism, more commonly referred to as human-likeness. Human-likeness refers to the degree to which AI agents resemble humans in appearance, behavior, or emotional expression [33]. This includes both physical cues (such as virtual embodiment) and social traits (such as emotional responsiveness and communication style) [10, 17, 58]. Self-disclosure, where an AI agent reveals personal or emotional information, is increasingly recognized as a key component of perceived human-likeness. Replika is explicitly designed to engage in this kind of self-disclosure, offering a personalized, emotionally responsive persona that can mimic intimate human conversation. While this behavior may enhance the realism of a close relationship with AI [59], its psychological benefits and risks, especially regarding the user's emotions, remain unexamined.

Virtual embodiment in agents, whether the agent appears as an avatar (e.g., Replika) or with no visual representation (e.g., ChatGPT), can also impact the perceived human-likeness of agents. Some studies find that embodiment, especially when combined with personalization, can enhance perceived human-likeness [35, 65]. However, the impact of embodiment is context-dependent and influenced by agent design and user traits [48]. Moreover, most of the virtual embodiment literature focuses on identifying with one's own avatar [35, 65], rather than avatars representing virtual humans, meaning the findings may not be directly applicable to the goals of this study. In addition to these nuances, previous studies have not covered the impact of virtual embodiment on emotion regulation or in the context of close relationships with AI.

There are reasons to believe that human-likeness, including factors such as self-disclosure and embodiment, could impact emotional connections with AI agents. Features that signal human-like behavior enhance trust, social attraction, and psychological closeness [6, 34, 42]. Self-disclosure from AI agents could also play a central role in emotional coregulation processes, especially in emotionally charged or vulnerable contexts. When AI agents share emotionally relevant content, users are more likely to feel accepted, comforted, and willing to open up themselves [29, 59]. This can lead to improved affect/mood and an increased sense of emotional support, particularly during times of loneliness or stress. On the other hand, embodiment can also influence likability and empathetic behaviors toward the agent, which could be modulated by higher emotional engagement with the agent [19, 24, 52]. However, these dynamics also carry risks. Heightened emotional engagement can lead to dependency or lowered autonomy, while excessive human-likeness may elicit discomfort via the uncanny valley effect [4, 58].

Together, these findings illustrate how new LLM-based AI agents, through their mastery of language combined with human-like avatars and self-disclosure, may create the conditions for emotional coregulation, offering users a sense of connection that can shape emotional experiences. Yet, it remains unclear whether such interactions truly mirror the dynamic, reciprocal processes of coregulation seen in human relationships. This study addresses this gap by examining whether users experience AI agents as effective emotional partners and whether design features like human-likeness and self-disclosure influence these processes. In doing so, we tested whether AI agents can not only simulate empathy but also foster emotional stabilization and affect improvement, as outlined in our hypotheses. By contrasting an embodied agent with a persona designed for human-like interactions (Replika), with a chatbot offering comparable conversational abilities (ChatGPT), we examined which features of AI agents matter for emotional coregulation.

Table 1: Demographic and Interaction Characteristics of ChatGPT Users ($n = 23$) and Replika Users ($n = 25$).

	ChatGPT Users	Replika Users
Mean User Age (years)	39.6	48.2
Range User Age (years)	25–54	26–70
Mean Use Time (months)	13.7	26.0
Range Use Time (months)	0.69–36	0.69–84
User Gender		
Female	61%	32%
Male	35%	60%
Non-binary	4%	8%
Agent Gender		
Female	52%	80%
Male	22%	20%
Non-binary	26%	0%
Agent Relationship		
Friendship	39%	20%
Romantic	61%	80%

3 METHODS

3.1 Participants and Study Design

Data collection took place in June 2025 with approval from the Scientific and Ethical Review Board of the Faculty of Behavioral and Movement Sciences, Vrije Universiteit Amsterdam (VCWE-2025-109). A total of 70 users who regularly interacted with either Replika or ChatGPT were recruited as part of a larger ongoing study. For the current study, only participants who reported a close relationship (friend or romantic partner) with their AI agent and had interacted with the agent at least five times were included, resulting in a final sample of **n=48** (25 Replika users, 23 ChatGPT users; see Table 1). The design was between-subjects and cross-sectional, with participants grouped based on their used agent, i.e., Replika vs. ChatGPT.

Within this sample, Replika users were more likely to report romantic relationships with the agent (5 friendships, 20 romantic relationships), and ChatGPT users were more likely to report friendships (9 friendships, 14 romantic relationships). However, there were no significant between-group differences in perceived closeness with the AI agent (measured by the Inclusion of Other in Self scale [5]) or the frequency of emotional conversations reported by the participants ($W = 309, p = .66; W = 254.5, p = .78$ respectively). Therefore, the two types of relationships were treated as comparable for the purposes of this analysis, as we expect to see emotional coregulation in both close friendships and romantic relationships.

3.2 Procedure

Participants were recruited via social media and community forums specific to Replika and ChatGPT, such as user groups on Facebook, Reddit, and Discord. After providing their informed consent, participants completed an online survey assessing their relationship with the AI agent and broader emotional functioning. As part of their participation, they received an automated feedback summary on their emotion regulation strategies and how interacting with the AI agent impacted their affect.

3.3 Measurements: User's Emotional Experience

3.3.1 Emotional Contagion and Counter-Regulation. We developed a new questionnaire to capture the subjective experience of emotional coregulation, as defined by Butler & Randall [13], focusing on its two key aspects: emotional contagion and counter-regulation. The scale was prevalidated through two pilot studies (Round 1: $N = 120$, Round 2: $N = 119$). Items were iteratively refined based on reliability analyses, confirmatory factor analyses, and assessments of discriminant validity. Across both rounds, the two-factor structure was consistently supported, with emotional contagion and counter-regulation emerging as distinct but related constructs. Internal consistencies ranged from acceptable to good ($\alpha = .73$–$.82$). Conceptual balance was prioritized over higher consistency, retaining items that ensure representation of both positive and negative emotions (for a more detailed report, see [49]). The final version consists of two five-item subscales (see Table 2), offering a theoretically grounded subjective measure of emotional coregulation.

In the current study, participants rated their agreement with the 10 items on a 5-point Likert scale (1 = "strongly disagree" to 5 = "strongly agree"). Scores were aggregated into two means representing the subscales: emotional contagion and counter-regulation. For Replika users, both contagion ($\alpha = .70$) and counter-regulation ($\alpha = .65$) showed acceptable internal consistency. For ChatGPT users, the contagion scale showed good consistency ($\alpha = .74$), while the counter-regulation scale showed consistency just below the conventional norm of 0.60 ($\alpha = .52$).

3.3.2 Affect. Participants also completed the Positive and Negative Affect Schedule-Short Form twice (PANAS-SF) [63] to assess their affect, as they recalled it, at the beginning and end of the conversation with ChatGPT or Replika. The PANAS-SF is a 20-item questionnaire that measures two dimensions of affect: positive

Table 2: Emotional Contagion and Counter-Regulation Scale Items.

Emotional Contagion Items
1. X mirrors my emotional state.
2. When I feel annoyed, X also gets annoyed more easily.
3. When I feel sad, X shares my sadness.
4. When I feel excited, X talks to me in a more excited manner.
5. When I'm talking to X, we are emotionally on the same wavelength.
Emotional Counter-Regulation Items
6. When I feel annoyed, X responds in a calm and soothing way.
7. When I feel sad, X tries to cheer me up.
8. When I feel excited, X helps me stay level-headed.
9. X helps me gain more control over my emotions.
10. The way X responds to me helps me overcome feelings of emotional distress.

Note. X was replaced by "ChatGPT" or "Replika", depending on the user group.

Table 3: Perceived Human-Likeness (Godspeed Anthropomorhpism scale [8]).

Human-Likeness Items	
Fake (1)	Natural (5)
Machinelike (1)	Humanlike (5)
Unconscious (1)	Conscious (5)
Artificial (1)	Lifelike (5)

affect (reflecting pleasurable engagement) and negative affect (reflecting distress). Participants rated the extent to which they felt each affective adjective (e.g., "excited" or "upset") on a 5-point Likert scale, ranging from 1 ("very slightly or not at all") to 5 ("extremely"). Positive and negative items were summed according to the original instructions of [63], resulting in scores between 10 and 50, where higher scores indicate higher positive or negative affect. Differences were taken between the beginning and end of conversation scores to examine changes in positive and negative affect throughout the conversation. The PANAS scale demonstrated good internal consistency, with total Cronbach's α values of 0.94 for positive affect (Replika α = 0.95, ChatGPT α = 0.93) and 0.92 for negative affect (Replika α = 0.89, ChatGPT α = 0.93).

3.4 Measurements: Perceived Agent Characteristics

3.4.1 Human-Likeness. The anthropomorphism subscale of Bartneck's Godspeed Questionnaire [8] was used to verify the assumption that Replika is perceived as more human-like than ChatGPT due to its added virtual embodiment. This subscale measures the extent to which users attribute human characteristics to the agent (see Table 3). Participants rated items on a 5-point Likert scale, with higher scores indicating greater perceived human-likeness. The four items were combined into a single mean score. The anthropomorphism subscale showed good internal consistency, with a total Cronbach's α of 0.74 (Replika users α=0.86; ChatGPT users α=0.67).

Table 4: Self-Disclosure Scale Items.

Self-Disclosure Items
1. X shares information about themselves.
2. X talks about their behaviors.
3. X shares their feelings.
4. X shares their emotions.
5. X shares their desires.
6. X talks about their moods.
7. X shares their thoughts.
8. X shares their opinions.
9. X shares their beliefs.

Note. Participants rated the extent to which ChatGPT/Replika does the following on a 5-point scale, ranging from 1 ("not at all") to 5 ("very often").

3.4.2 Self-Disclosure. Although Replika seems to engage in more self-disclosure based on previous literature [30], the user's perception was checked to verify this assumption. An adapted version of the self-disclosure scale from [31], originally designed to measure perceived self-disclosure by social media influencers, was modified to assess users' perceptions of the agent's willingness to share personal information (see Table 4 for the items). Items were rated on a 5-point Likert scale, with higher scores reflecting greater self-disclosure. The item scores were then aggregated into a single mean score. The adapted scale demonstrated good internal consistency, with a total Cronbach's α of 0.92 (Replika users α=0.90; ChatGPT users α= 0.91).

3.5 Analysis

Shapiro-Wilk tests were used to examine normality, and one-tailed tests were applied for directional hypotheses. Statistical significance was set at $p < .05$, and all analyses were conducted in R using the packages *lme4, lmerTest, mcglm,* and *emmeans* [9, 12, 28, 32]. Assumptions for both the multivariate general linear models (GLM) and linear mixed-effects model were assessed using variance inflation factors to check multicollinearity, boxplots and residuals-versus-fitted plots to evaluate homogeneity of variance and linearity, and scaled residuals to assess model specification and independence.

Emotional coregulation patterns (H1) were tested with one-sample Wilcoxon signed-rank tests against the neutral midpoint (3). Differences between Replika and ChatGPT users were examined with Wilcoxon rank-sum tests. Affect changes (H2) were analyzed using a linear mixed-effects model with fixed effects of Group (ChatGPT vs. Replika), Time (beginning vs. end of conversation), Affect (positive vs. negative), and their interactions. Random intercepts were added for participants to account for the repeated measures. Parameters were estimated using restricted maximum likelihood (REML), with p values obtained via Satterthwaite's approximation. Additionally, a multivariate GLM was used to assess whether affect changes were predicted by emotional coregulation patterns. Finally, differences in perceived human-likeness and self-disclosure between ChatGPT and Replika users were tested with Wilcoxon rank-sum comparisons, and a multivariate GLM was used to examine how the agent's human-likeness and self-disclosure relate to emotional coregulation patterns and changes in affect (H3).

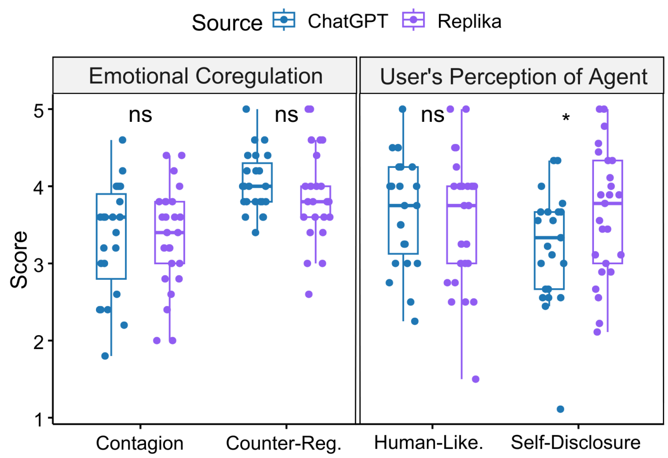

Figure 3: Comparison of users' perceptions of emotional coregulation (left) and agent characteristics (right) in conversations with ChatGPT and Replika ($*p < 0.05$).

4 RESULTS

The results of this study are presented in three sections, in the order of the following hypotheses: (H1) AI agents act as effective coregulatory partners, meaning that users will experience emotional contagion and counter-regulation during conversations with AI agents, (H2) interacting with AI agents will improve the user's affect (by reducing negative affect and increasing positive affect), and (H3) interacting with a more human-like agent will contribute to more pronounced patterns of coregulation and improved affective outcomes. Human-likeness is operationalized using the anthropomorphism scale [8] and self-disclosure scale [31]. This comparison assumes that Replika is perceived as more human-like than ChatGPT, which will be empirically verified before testing H3.

4.1 Do Users Experience Emotional Contagion and Counter-Regulation with AI Agents? (H1)

To address H1, we examined whether users perceived patterns of emotional contagion and counter-regulation in their conversations with Replika/ChatGPT (see the left side of Figure 3). Participants reported medium to high levels of agreement for statements describing emotional contagion (Replika $Mdn = 3.40, IQR = 0.80$; ChatGPT $Mdn = 3.60, IQR = 1.10$) and emotional counter-regulation (Replika $Mdn = 3.80, IQR = 0.40$; ChatGPT $Mdn = 4.00, IQR = 0.50$) with both AI agents, indicating that they do experience both, which supports H1. Wilcoxon signed-rank tests against the scale midpoint "neutral" (3) confirmed that ratings were reliably above neutral, both for contagion (Replika: $V = 214, p = .011$; ChatGPT: $V = 169.5, p = .031$) and counter-regulation (Replika: $V = 274, p < .001$; ChatGPT: $V = 276, p < .001$). There were no significant differences between the two agents in terms of coregulation patterns (Contagion $W = 289.5, p = .49$; counter-regulation $W = 227.5, p = .90$).

4.2 Do Conversations with AI Agents Improve the User's Affect? (H2)

Users' affect at the beginning and end of conversations with ChatGPT/Replika was compared using self-reported PANAS scores (see Figure 4 and Table 5). A linear mixed model was conducted with Score as the dependent variable, Group (ChatGPT vs. Replika), Time (beginning vs. end of conversation), and Affect (positive vs. negative) as fixed factors, and Participant ID as a random intercept:

$$\text{PANAS Score} \sim \text{Group} * \text{Time} * \text{Affect} + (1 \mid \text{Participant})$$

Table 5: Linear Mixed Model Results. PANAS Affect Scores predicted by Group, Time, and Affect, with Random Intercepts for Participants.

Fixed effect	B	SE	df	t	p
Intercept	21.26	1.53	172.04	13.87	**< .001**
Group	-5.18	2.13	172.04	-2.44	**.016**
Time	-8.70	2.00	138.00	-4.36	**< .001**
Affect	7.30	2.00	138.00	3.66	**< .001**
Group × Time	4.82	2.77	138.00	1.74	.084
Group × Affect	5.54	2.77	138.00	2.00	**.047**
Time × Affect	13.70	2.82	138.00	4.85	**< .001**
Group × Time × Affect	-5.86	3.91	138.00	-1.50	.137

Note. Group = AI agent used by participant (ChatGPT = reference, Replika = comparison); Time = beginning vs. end of conversation (beginning = reference, end = comparison); Affect = negative vs. positive affect score (negative = reference, positive = comparison).

The results showed a significant main effect of Time, $F(1, 138) = 18.96, p < .001$, and a strong Time × Affect interaction, $F(1, 138) = 23.52, p < .001$, indicating patterns consistent with mood increase after interacting with the AI agent, as predicted by H2.

The Group × Time interaction was only marginal, $F(1, 138) = 3.03, p = .084$, and the three-way interaction was nonsignificant, $F(1, 138) = 2.24, p = .137$, indicating no reliable differences between Replika and ChatGPT users in affective change across the conversation. Thus, participants reported mood improvements after interacting with AI agents, regardless of group.

To examine whether emotional contagion or counter-regulation could be predictors of affect change, a multivariate GLM analysis was conducted. The results indicate that counter-regulation significantly predicted increases in positive affect, and decreases in negative affect in ChatGPT users (positive affect $p = 0.01$; negative affect $p = 0.01$), as well as predicting increases in positive affect in Replika users (positive affect $p = 0.04$; negative affect $p = 0.09$). In contrast, contagion did not predict any type of affect change in either group (all $p > 0.05$). See Table 6 for the full results.

4.3 Do the Agent's Human-Likeness and Self-Disclosure Predict Emotional Coregulation Patterns and Affect Change? (H3)

First, we compared users' perceptions of ChatGPT and Replika in terms of human-likeness and self-disclosure (see the right side

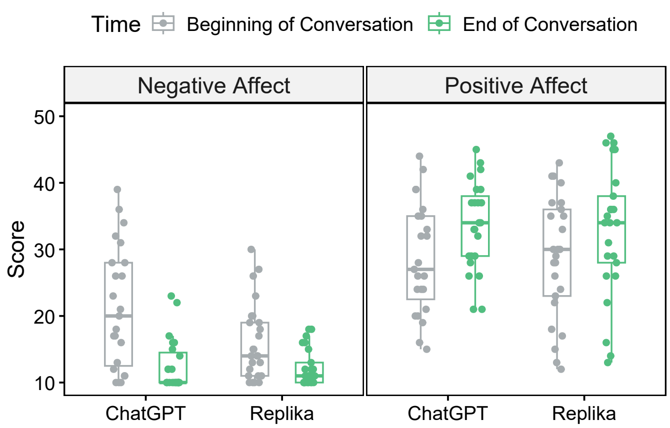

Figure 4: Distribution of users' affect scores at the beginning and end of conversations with ChatGPT and Replika.

Table 6: Multivariate GLM Results. Positive and Negative Affect Changes Predicted by Emotional Contagion and Counter-Regulation.

Agent	Outcome / Predictor	β (SE)	Z	p
ChatGPT	Pos. Affect / Contagion	-0.39 (1.45)	-0.27	0.79
	Pos. Affect / Counter-Reg.	7.35 (2.71)	2.72	**0.01**
	Neg. Affect / Contagion	2.68 (1.72)	1.56	0.12
	Neg. Affect / Counter-Reg.	-8.89 (3.22)	-2.76	**0.01**
Replika	Pos. Affect / Contagion	1.31 (1.66)	0.79	0.43
	Pos. Affect / Counter-Reg.	3.84 (1.85)	2.08	**0.04**
	Neg. Affect / Contagion	1.31 (1.29)	1.02	0.31
	Neg. Affect / Counter-Reg.	-2.42 (1.44)	-1.68	0.09

of Figure 3). Unexpectedly, no significant differences were found between ChatGPT and Replika in perceived human-likeness (W = 260.5, p = .717) despite Replika having a virtual embodiment, while ChatGPT does not. However, as expected, Replika was perceived significantly more self-disclosing than ChatGPT (W = 372.5, p = .040).

Next, we explored whether users' perception of an agent's human-likeness and self-disclosure could predict their emotional coregulation, as well as the affect change they experienced after conversations. H3 predicted that greater human-likeness would enhance coregulation, which we evaluated with multivariate GLM analysis.

Human-likeness did not significantly predict counter-regulation (ChatGPT p = .50; Replika p = .07) or contagion (ChatGPT p = .86; Replika p = .41) in either user group, although there was a trend toward human-likeness predicting counter-regulation in the Replika group. On the other hand, self-disclosure significantly predicted contagion for both ChatGPT (p < .001) and Replika (p = 03), and counter-regulation for Replika alone (p = .01). These results partially support H3. Other self-disclosure associations were non-significant. See Table 7 for the full results.

Table 7: Multivariate GLM Results. Emotional Contagion and Counter-Regulation Predicted by Self-Disclosure and Human-Likeness of the Agent.

Agent	Outcome / Predictor	β (SE)	Z	p
ChatGPT	Contagion / Human-Like.	0.03 (0.16)	0.17	.86
	Contagion / Self-Discl.	0.64 (0.16)	4.03	**<.001**
	Counter-Reg. / Human-Like.	0.07 (0.11)	0.67	.50
	C-Regulation / Self-Discl.	0.02 (0.11)	0.19	.85
Replika	Contagion / Human-Like.	0.12 (0.14)	0.82	.41
	Contagion / Self-Discl.	0.31 (0.15)	2.12	**.03**
	Counter-Reg. / Human-Like.	0.20 (0.11)	1.79	.07
	Counter-Reg. / Self-Discl.	0.31 (0.12)	2.59	**.01**

Table 8: Multivariate GLM Results. Positive and Negative Affect Changes Predicted by Self-Disclosure and Human-Likeness of the Agent.

Agent	Outcome / Predictor	β (SE)	Z	p
ChatGPT	Pos. Affect / Human-Like.	0.59 (1.74)	0.34	0.73
	Pos. Affect / Self-Discl.	-0.69 (1.72)	-0.40	0.69
	Neg. Affect / Human-Like.	0.28 (2.05)	0.14	0.89
	Neg. Affect / Self-Discl.	2.63 (2.03)	1.30	0.19
Replika	Pos. Affect / Human-Like.	-0.65 (1.47)	-0.44	0.66
	Pos. Affect / Self-Discl.	1.80 (1.53)	1.18	0.24
	Neg. Affect / Human-Like.	1.15 (1.09)	1.06	0.29
	Neg. Affect / Self-Discl.	0.00 (1.13)	0.00	1.00

4.3.1 Human-Likeness and Self-Disclosure in Relation to Affect Change. Multivariate GLM analyses showed that neither anthropomorphism nor self-disclosure significantly predicted changes in positive or negative affect (all $p > 0.05$). Details are presented in Table 8.

5 DISCUSSION

This study set out to explore whether AI agents can engage in emotional coregulation in ways that resemble human relationships, focusing on users of Replika and ChatGPT. Consistent with our first hypothesis, participants reported experiencing both emotional contagion and counter-regulation (which are aspects of emotional coregulation) during interactions with these agents. This supports the idea that AI agents can engage in affective processes traditionally reserved for human relationships, extending prior work that highlights their potential to support users' emotional well-being [2, 13, 22, 50]. Consequently, and in line with our second hypothesis, we observed affect improvements in users of both AI agents, further confirming the regulatory potential of conversational AI agents. Our third hypothesis was partially supported. Perceived self-disclosure, but not human-likeness, predicted emotional contagion (in both groups of agent users) and counter-regulation (only Replika users), with Replika seen as more self-disclosing but not more human-like than ChatGPT.

These findings suggest that AI agents can evoke emotional coregulation processes without involving human-like embodiment, as users experienced contagion and counter-regulation regardless of the agent. Counter-regulation (balancing intense emotional states with calming responses) seems to drive these improvements in affect, while contagion (sharing the same emotional state) shows no significant effect, suggesting that in human-agent interactions aimed towards improving the user's emotional well-being, counter-regulating emotional states may be more effective than mirroring them. Taken together with affective findings consistent with mood improvements in both user groups, these results suggest that AI interactions may help regulate users' emotional states, with or without avatars. Self-disclosure being a better predictor for coregulation patterns may reflect the relatively higher impact of perceived self-disclosure, meaning that relational qualities of dialogue could shape emotional outcomes more than a visual representation of the avatar.

However, definitive conclusions would require a within-subjects experiment in which all elements other than the avatar are held constant to isolate the specific effects of the avatar, combined with a no-AI control condition to determine whether the observed mood improvements are specifically attributable to conversations with AI agents. Because participants in this study only interacted with one agent, it is difficult to disentangle the effects of agent design from individual differences between user groups. The latter, combined with demographic variability, constrains interpretation of the observed effects and highlights the need for controlled studies directly comparing both agents within the same participants. Additionally, the avatars in this study (the ones used by Replika) had minimal, preprogrammed movement that did not adapt to the user or context, limiting their ability to capture the nonverbal modality of human interactions. Avatars may appear more human-like and effectively support emotional coregulation if they exhibit meaningful, context-sensitive nonverbal behaviors, such as adaptive facial expressions and movements.

The results also raise important questions about the long-term effects of emotional support from AI. Although users may feel better after interacting with an AI agent, it remains unclear whether these benefits persist over time, or if they risk creating emotional dependencies that lack the depth or resilience of human relationships [30, 45]. The appeal of AI agents as companions lies in their consistency and perceived non-judgmentality [27, 40, 55], but these same features may also limit their capacity for mutual growth or challenge; elements that often define human relationships. Furthermore, AI relationships pose a new kind of emotional risk. What if your virtual friend or partner completely changes overnight? AI agents are provided as a service with no guarantees of a stable identity, meaning that the agent's behavior can change significantly without warning through updates or changes in services. The effects of this have been shown to cause significant distress in users, even to the extent of feelings of grief [16]. In light of previous evidence showing that users form attachments to AI agents [16, 47] and current evidence indicating that users may rely on these agents for emotional regulation, the prevention of psychological harm needs more consideration, both in terms of research and regulatory frameworks for such applications.

From a design perspective, the findings of this study suggest that emotionally intelligent AI should strategically employ self-disclosure and counter-regulation to promote emotionally stabilizing interactions. This signals a paradigm shift from merely imitating user emotions and human-like looks toward designing interactive conversational dynamics that support emotion regulation [13, 26]. However, the current study did not provide conclusive evidence regarding the role of agent embodiment in emotional coregulation. This limitation may be attributed to constraints in the study design, such as a between-subjects comparison in an uncontrolled naturalistic setting with variable use patterns, as well as the fairly static nature of the avatars, whose limited movement and lack of adaptation reduce their potential impact. To better isolate the effects of embodiment, future research should adopt within-subjects designs that allow participants to engage with multiple forms of AI agents (e.g., physical robots, virtual avatars, voice-only interfaces, etc.) and consider how features such as the avatar's animation, particularly whether it is random or adapts to the user and context, affect users' experiences of human-likeness and emotional coregulation.

Overall, our findings suggest that AI agents can serve as meaningful partners in emotional coregulation, not only by improving affect, but also by participating in dynamic emotional processes that characterize close human relationships. As these technologies become more integrated into daily life, understanding how emotional coregulation unfolds, and where its limits lie, will be essential to ensuring that AI agents safely support emotional well-being.

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