Exploring Generative AI for Personalized Engagement in Therapy Adherence Contexts

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Abstract: This study explores the use of generative AI to create personalized virtual companions, referred to as "Tamagotchis," aimed at fostering emotional engagement and supporting therapy adherence. A prototype system was developed that generates individualized 2D image sequences representing symbolic objects or characters in different states, such as weakened, neutral, or improved. Through a mixed-methods evaluation involving a quantitative survey (n=78) and qualitative interviews (n=10), the study assessed the visual clarity, emotional resonance, and perceived relevance of the generated images. Results indicate that personalized objects were more emotionally engaging than predefined versions, and user involvement in the creation process significantly enhanced identification and motivation. These findings suggest that emotionally adaptive virtual companions may hold promise as a supportive element in long-term therapeutic interventions.

Keywords: Generative AI, Therapy adherence, Personalization, Virtual companion, Tamagotchi effect

1. Introduction

Lack of adherence to treatment presents a substantial challenge to healthcare systems (Religioni et al. 2025). Research indicates that a significant proportion of patients fail to consistently follow medical recommendations. On average, only about half of all patients adhere to long-term treatment regimens (Castillo et al. 2021). This not only compromises the effectiveness of medical interventions but also leads to increased healthcare costs (Ehlken et al. 2020). Therapy adherence is particularly critical in the treatment of chronic illnesses, which require consistent and often complex long-term management strategies (Anghel, Farcas, and Oprean 2019). According to the World Health Organization, noncommunicable diseases (NCDs) were responsible for over 43 million deaths globally in 2021, approximately 75% of non-pandemic-related deaths (WHO 2024). Given the global burden of chronic diseases, effective and sustainable measures to support patient adherence are needed.

Digital technologies are playing an increasingly important role in addressing this challenge. Mobile health applications, telemonitoring tools, virtual assistants, and AI-supported platforms offer novel ways to engage patients and support continuous self-management (Rejula *et al.*, 2021; Lavine, 2020; Scholz and Teetz, 2021). Practical examples include digital diaries for oncology patients, remote monitoring systems for diabetes or chronic obstructive pulmonary disease (COPD), and interactive pain management apps that incorporate biofeedback and psychotherapeutic elements (Vitodata, n. d.; Wechsler and Mühlberger, 2024). However, many of these digital health interventions rely on standardized, one-size-fits-all solutions. They frequently neglect individual differences in personality, emotional needs, and motivational drivers (Baumel et al. 2019). This lack of personalization can result in diminished user engagement and limited long-term effectiveness (Midyett 2023). One emerging direction is the integration of emotionally engaging, personalized digital entities into therapeutic contexts (Moser and Keller 2025). Inspired by the "Tamagotchi effect", this paper investigates how generative AI (genAI) can be used to create personalized virtual companions that symbolically represent a patient's therapeutic journey.

2. Research Objectives

This study explores how generative AI can be used to create personalized virtual companions, referred to in the context of this research as "Tamagotchis", that foster emotional attachment and support therapy adherence. It is based on the assumption that emotionally resonant, individualized virtual objects which symbolically represent a patient's therapeutic journey can strengthen engagement and motivation over time. The central research question is:

How can generative AI be leveraged to create personalized virtual companions (Tamagotchis) that effectively foster emotional attachment and enhance therapy adherence, while ensuring distinct visual progression and stylistic coherence for intuitive user comprehension?

To address this question, the study focuses on the development and evaluation of a prototype that generates personalized 2D image sequences depicting a symbolic object or companion in different stages of a therapeutic or developmental journey. The use of 2D imagery was selected as a technically accessible and conceptually focused starting point to explore the feasibility and perceived impact of this approach.

3. Methodology

This research is grounded in the Design Science Research (DSR) framework, which emphasizes both scientific rigor and practical relevance through an iterative, cyclic process (Hevner 2007). The development and evaluation of the research artifact followed the Design Science Research Methodology as outlined by Peffers et al. (2007). This study begins at the design and development phase, as both the underlying problem and the research objectives were predefined: to explore how generative AI can be used to design personalized Tamagotchis that promote emotional attachment and therapy adherence, while ensuring their visual stages are clearly distinguishable and stylistically consistent for intuitive understanding. The research was structured into three main phases:

First, technical and functional requirements were defined, focusing on visual consistency, recognizable transitions, and semantic coherence. This involved evaluating language models, image generation platforms, and prompt strategies through literature review, testing, and iteration.

Second, the artifact was iteratively developed to support collaboration between patients and health care professionals, offering two personalization modes—*TamaPersona* and *Create-a-Gotchi*—with a focus on functionality, visual quality, and reliability.

Third, the prototype was validated through a mixed-methods study: a quantitative online survey (n=78) and qualitative interviews (n=10). Quantitative data were analyzed descriptively and exploratively (Döring & Bortz, 2016), while qualitative data were thematically analyzed using verified interview transcripts and structured coding (ibid.).

4. Related Work

Digital interventions have become increasingly important in managing chronic diseases and supporting therapy adherence. A wide range of tools, including mobile health applications, remote monitoring systems, and patient-facing platforms, are designed to provide continuous support and integrate data into clinical workflows. Projects like the Digital Companion combine practice management software with patient apps, enabling seamless communication between patients and healthcare providers (Färber et al. 2023, Yoker 2023). Condition-specific solutions such as monitoring systems for diabetes and COPD, or software for inflammatory bowel disease, exemplify the diversity of applications currently in use (Scholz and Teetz 2021). For cancer patients, interactive therapy diaries offer additional guidance throughout treatment (ibid.). Many of these tools aim to promote therapy adherence directly, offering features such as medication reminders, symptom tracking, and progress visualization. Apps like MyTherapy and Medisafe have shown measurable improvements in adherence, yet their impact often remains limited to functional support, lacking deeper emotional engagement with users (Vervloet et al. 2012). In an effort to enhance motivation, gamification-based applications such as SuperBetter and Habitica incorporate reward systems and playful challenges. While effective in stimulating short-term engagement, these strategies often fall short in sustaining long-term behavioral change (Johnson et al. 2016).

Text-based virtual assistants such as Woebot and Wysa provide psychological support and reminders through natural language interaction, enabling a basic level of personalization (Fitzpatrick, Darcy, and Vierhile 2017). However, these systems typically lack visual or interactive depth, limiting their emotional resonance. XR-based therapies using virtual or augmented reality have demonstrated clinical potential, particularly in the treatment of pain and anxiety disorders. Notable examples like SnowWorld show significant effects on pain reduction in acute settings (Hoffman et al. 2011). Despite their promise, these interventions are typically confined to specific therapeutic scenarios and are not designed for continuous or adherence-focused support. Overall, while digital tools in healthcare are advancing, most current approaches fall short of fostering sustained emotional connection, a factor increasingly recognized as critical for long-term engagement and adherence.

Beyond functional design, recent research highlights the growing importance of emotional connection and personalization in digital health tools. Mental health apps have been shown to reduce depressive symptoms effectively; however, the inclusion of gamification elements does not significantly enhance their effectiveness (Six et al. 2021). This suggests that long-term engagement may require more than surface-level interactivity and instead depend on meaningful emotional alignment. Additional findings indicate that virtual agents perceived as visually similar to users can increase identification, positive affect, and motivation (Ashrafi et al. 2024). Furthermore, AI-driven coaching tools capable of analyzing user input and providing emotionally attuned feedback have been found to foster a stronger sense of engagement and support (Alazraki et al. 2021). These insights underscore the value of personalized and emotionally resonant interactions in the design of future therapeutic technologies.

Generative AI is increasingly being adopted in healthcare, particularly in areas such as diagnostic assistance, screening processes, and the interpretation of medical data (Yim et al. 2024, McKinsey 2025). Alongside its technical potential, however, ethical considerations ranging from data security and emotional manipulation to algorithmic bias have become central to discussions about its responsible integration into clinical practice (The Lancet Regional Health – Europe 2023, Ning et al. 2024). While current applications primarily aim at improving clinical efficiency, the potential of genAI to facilitate emotionally engaging experiences in therapeutic settings remains largely unexplored.

Concepts from adjacent fields such as marketing and psychology suggest that emotional resonance plays a decisive role in shaping user experience and long-term engagement (Forrester 2015). Applying this insight to healthcare, the idea has emerged to develop emotionally appealing, personalized virtual companions to support therapy adherence. Building on this vision, early-stage concepts have been formulated and adapted to immersive environments such as extended reality (Moser 2024, Moser and Keller 2025). In addition to prior empirical work, theoretical models such as Self-Determination Theory (Deci and Ryan 1985) and the COM-B model of behavior change (Michie, van Stralen, and West 2011) emphasize the importance of autonomy, competence, and relatedness in sustaining engagement. The proposed Tamagotchi approach aligns with these frameworks by offering a sense of personal agency and emotional resonance, thereby situating this work within a broader theoretical foundation for understanding digital adherence support.

However, realizing such concepts in practice requires foundational exploration of their technical feasibility and psychological impact. This study addresses this need by investigating how generative AI can be used to create personalized 2D virtual companions, representing an initial step toward emotionally adaptive and personally meaningful digital health interventions.

5. The Conception of the Tamagotchi Creator

The goal of the technical implementation was to develop a system that uses generative AI to create personalized visual objects functioning as symbolic companions in a therapeutic context. To support this goal, a modular system architecture was designed, comprising four core components: a user-friendly frontend interface, a logic-driven backend structure, a prompt generation engine, and an image generation interface powered by DALL·E 3 (available in GitHub; see Lauria, 2025). The prototype offers two distinct modes of interaction, each reflecting a different personalization logic: *TamaPersona* and *Create-a-Gotchi*. These two pathways accommodate varying user needs and therapeutic contexts (see Figure 1). To ensure both expressiveness and usability, each Tamagotchi can be generated in three or four visual stages: three stages provide the minimum for a meaningful progression, while a fourth tests whether clarity, consistency, and emotional resonance hold with added visual complexity.

5.1 TamaPersona

TamaPersona enables health care professionals to generate Tamagotchis based on individual personality traits, preferences, or motivational profiles of patients. The process begins with a free-text description of the person, such as: “Leonie is curious, sensitive, and grows through challenges.” This input is processed by GPT-4o, which interprets the personality and proposes a symbolic object—e.g., a fox—along with a brief narrative and a set of typical states such as “sleeping,” “waking up,” “running,” and “resting.” The model’s output is returned in a structured format, enabling automated processing.

In a second step, GPT-4o generates three or four consistent image prompts corresponding to the suggested object and states. These prompts are then passed to DALL·E 3, which produces the respective images. The resulting visuals are stored and displayed in the frontend, allowing for immediate feedback and reflection. This approach supports an interpretive, therapist-led personalization pathway.

5.2 Create-a-Gotchi

Create-a-Gotchi offers a more user-driven alternative. It is intended for users who already have a concrete idea of the object that best represents them. In this mode, individuals directly input the object, its visual characteristics, and associated states. For example, a user might describe a “white mug with golden trim” and specify the states “empty,” “steaming,” and “ideal drinking temperature.”

These inputs are automatically structured and processed by GPT-4o to generate precise, stylistically coherent image prompts. As in *TamaPersona*, the prompts are then rendered into images by DALL·E 3. The images are stored and immediately presented in the user interface. This path allows for greater autonomy and aesthetic control, reflecting a co-creative personalization approach.

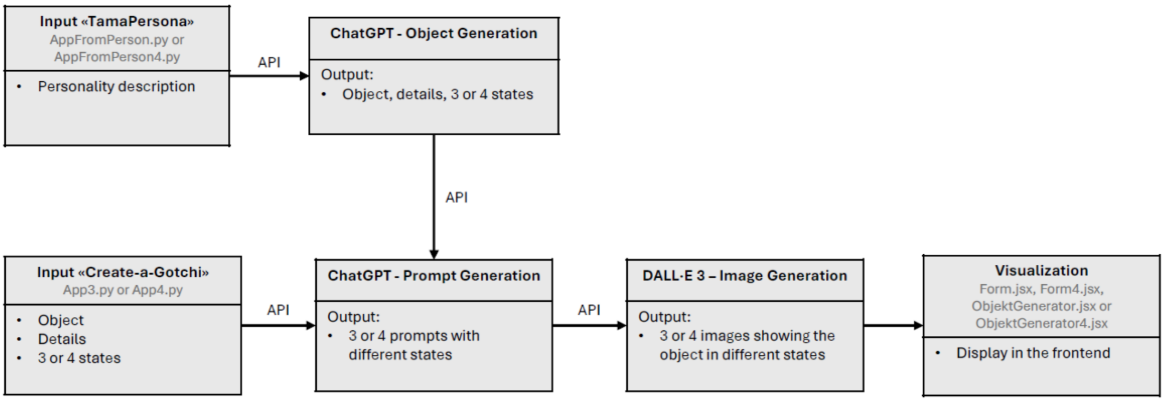

Figure 1: System Architecture

5.3 Prompt Engineering

To ensure consistent visual representation of personalized Tamagotchis across multiple states, a well-defined prompt strategy was essential. Two approaches were explored: an initial manual method using a morphological box to systematically combine visual attributes (e.g., object type, mood, background, style), and an automated semantic approach using ChatGPT.

While the manual strategy was helpful for early testing and analyzing model behavior, it was not scalable for practical use. In the final prototype, prompts were generated automatically. Based on a free-text personality description provided by healthcare professionals, ChatGPT produced three or four prompts, each corresponding to a distinct state such as calm, anxious, or joyful. These prompts (available through OSF; see Lauria, Moser and Keller, 2025) preserved the object's core features while adjusting parameters like lighting, color, or posture to reflect emotional variation.

6. Evaluation

6.1 Study Design

This study used a mixed methods approach to evaluate both the technical feasibility and user acceptance of personalized Tamagotchi-like visual artifacts in a therapeutic context. Combining quantitative and qualitative methods enabled the assessment of measurable visual perception alongside deeper emotional and subjective responses (for additional material and detailed results see Lauria, Moser and Keller, 2025).

The *quantitative* component consisted of an online survey assessing whether AI-generated images were perceived as visually and emotionally distinct across intended states (e.g., neutral, positive, negative). It also examined user acceptance of personalized, expressive visual objects in therapy. Participants (n=78) viewed ten image sequences from five categories—*Animals*, *Plants*, *Objects*, *People*, and *Fantasy*—each depicting three or four states (for a selection of sequences see Table 1). They arranged states in a logical order and rated the visual progression and stylistic coherence on Likert scales.

The *qualitative* component involved semi-structured interviews (n=10) exploring emotional resonance, comprehensibility, aesthetics, and therapeutic relevance. Participants first discussed attitudes toward digital Tamagotchis, emotional attachment, and AI. They evaluated four image sequences, answered open-ended questions, and created a personalized Tamagotchi using the *TamaPersona* tool. If needed, *Create-a-Gotchi* was used to refine results. Participants assessed fit, expression, quality, and preferences between personalized and pre-generated images. All inputs and outputs were documented for analysis.

6.2 Sample Description

A total of 78 individuals took part in the quantitative online survey, the majority of whom were in young to middle adulthood. The largest proportion belonged to the 25–34 age group (37%), followed by 18–24-year-olds (23%) and 35–44-year-olds (20%). Older age groups were only sporadically represented. The gender distribution was nearly balanced, with 53% identifying as male, 46% as female, and one participant identifying as non-binary. Approximately half of the participants had prior experience with therapeutic interventions, mainly in the form of psychotherapy or physiotherapy. Experience with digital therapy was uncommon; some respondents mentioned familiarity with mindfulness applications, online psychotherapy platforms, or tools such as ChatGPT or Fitbit.

The ten participants in the qualitative interviews represented a heterogeneous sample with respect to age, gender, and educational background. The largest age group was again between 25 and 34 years, with individual participants ranging in age from 18 to 84 years. Six participants identified as female and four as male. Approximately half of the interviewees reported previous experience with therapy. Digital therapeutic approaches were largely unfamiliar. Attitudes toward digital support tools varied from cautious to open, depending on personal experience and technical affinity.

Table 1: Selection of Tamagotchi sequences

No.	Image Category *Correct sequence*	Image Sequence
1	Animals (Part 1) *1 → 3 → 2*	
2	Animals (Part 2) *1 → 3 → 4 → 2*	
3	Plants (Part 1) *3 → 2 → 1*	
4	Plants (Part 2) *2 → 4 → 3 → 1*	
6	Objects (Part 2) *2 → 4 → 3 → 1*	
8	Humans (Part 2) *3 → 2 → 1 → 4*	

9	Fantasy (Part 1) *1 → 2 → 3*	

6.3 Survey Results

The quantitative survey revealed that participants largely perceived the AI-generated image series as visually coherent and developmentally logical. Across all responses, 67% agreed or strongly agreed that the visual development between image states was clearly recognizable, while 71% agreed that the visual style was coherent (see Figure 3).

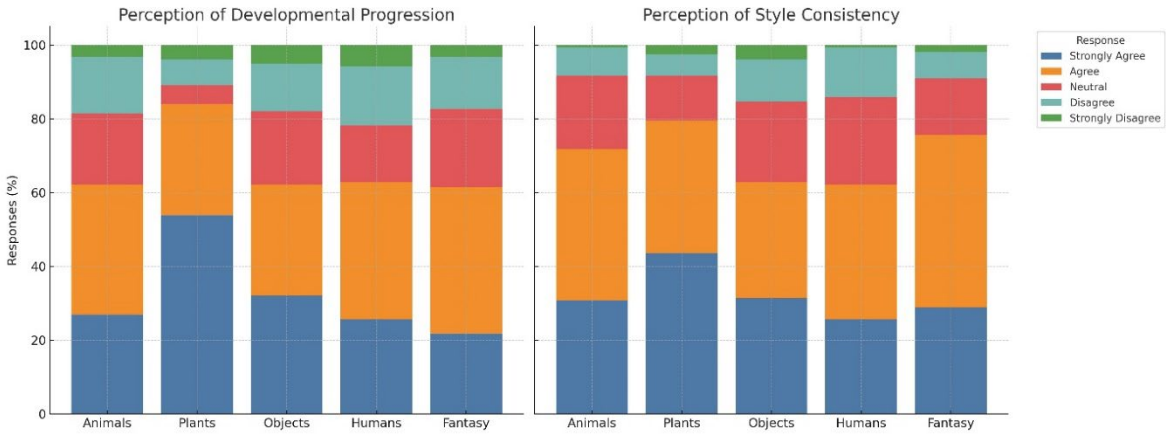

Figure 2: Perception of Developmental Progression and Style Consistency

Recognition accuracy varied by image category (see Figure 4). The *Animals* category showed the highest agreement with the intended state sequence, particularly in Sequence 1 (88.5%) and Sequence 2 (60.3%). In contrast, the *Plants* category had the lowest recognition rates, with only 25.6% and 23.1% correctly ordering Sequence 3 and 4, respectively. Despite this, subjective ratings of visual progression and style coherence remained high. Other categories showed mixed results. In the *Objects* category, Sequence 5 was correctly ordered by 87.2% of participants, while Sequence 6 dropped to 29.5%. The *Humans* category followed a similar pattern, with 76.9% correct in Sequence 7, but only 23.1% in Sequence 8. The *Fantasy* sequences were moderately successful, with correct orderings of 67.9% and 80.8%, respectively, and were generally well received in terms of narrative plausibility and visual consistency.

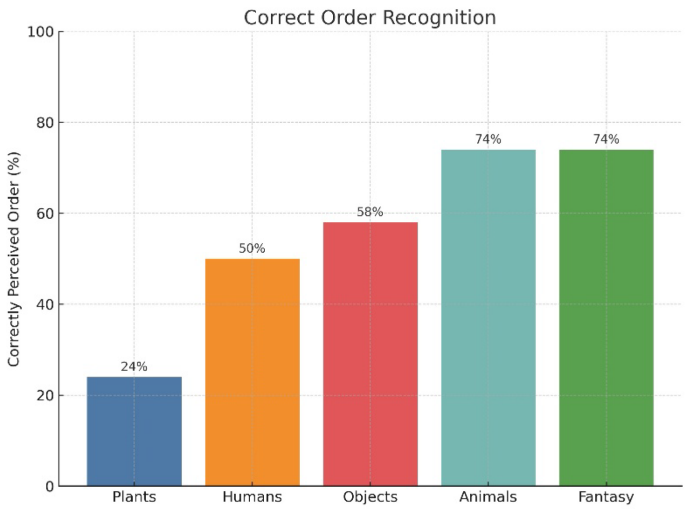

Figure 3: Correct Order Recognition by Image Category

Regarding concept perception, 72% of respondents expressed a positive view of using a personalized, AI-generated Tamagotchi as a motivational tool in therapy. 65% indicated they could imagine using or recommending such a system. However, critical feedback was also collected in open questions, grouped into the following themes:

- Conceptual Clarity: Some participants struggled to understand how the Tamagotchi system would function in therapy.
- Target Group Suitability: The concept was perceived as more appropriate for younger or tech-savvy users.
- Emotional Engagement: Concerns were raised about the depth or appropriateness of emotional attachment to digital objects.
- Privacy and Ethics: Questions emerged about data handling and ethical implications of visualizing personal health data.
- Sustained Motivation: Several respondents questioned whether engagement could be maintained over the long term.

6.4 Interview Results

Reactions to Pre-generated Image Sequences

In the initial phase of the interviews, participants were presented with four pre-generated image sequences, each representing a different virtual Tamagotchi object progressing through various emotional or health-related states. Overall, responses were cautiously positive. Many participants expressed openness to engaging with such imagery in a therapeutic context, noting that the sequences conveyed symbolic narratives of development, change, and motivation. These terms recurred frequently and indicate that the visual transitions were broadly interpreted as metaphors for therapeutic progress. Sequence 1 (*Animals*) stood out as the most emotionally engaging, often described as "cute," "charming," or "uplifting," and elicited spontaneous identification and positive affect. In contrast, Sequence 3 (*Plants*) was frequently perceived as emotionally distant or visually unappealing, with some participants describing it as "too dark" or "not motivating." This diversity in reception underscores the subjective nature of visual aesthetics and emotional resonance. Despite these variations, most participants identified at least one sequence with which they felt a personal connection, highlighting the potential of even standardized images to evoke emotional and motivational responses. However, a minority found none of the images compelling, which points to the limitations of pre-designed visuals in addressing diverse user preferences.

Reactions to Personalized Tamagotchis

The second, interactive part of the interviews focused on the creation of personalized Tamagotchi objects. Based on short self-descriptions, the *TamaPersona* tool generated visual representations intended to reflect individual traits or self-perceptions. In cases where the output was not satisfactory, particularly due to stylistic or aesthetic misalignment, participants used *Create-a-Gotchi* to modify elements such as shape, color palette, or thematic content. Most participants responded positively to the personalized objects, frequently describing them as appropriate, emotionally resonant, and even self-representative. Statements such as "It fits me well," or "The phoenix really represents me" illustrate the emotional depth of identification that personalization can enable. This effect was strengthened by participants' active involvement in the creation process, which was commonly described as enjoyable, creative, and meaningful. Only in isolated cases was the generation process perceived as frustrating or exhausting, typically due to multiple iterations being needed to reach a satisfying result. Crucially, eight out of ten participants preferred their personalized Tamagotchi over the standardized image sequences, attributing this preference to greater emotional fit, the ability to co-create the visual content, and a stronger sense of ownership.

Subjective Impressions and Suggestions for Improvement

In the final section of the interviews, participants were asked to reflect on the process as a whole and to offer suggestions for further development. Emotional responses were overwhelmingly positive: participants frequently described the experience as motivating, fun, stimulating, or empowering. Several remarked that the process had prompted reflection on personal traits and emotional needs, indicating that the prototype had some exploratory and introspective impact even outside a formal therapeutic context. Participants offered numerous suggestions to improve the emotional accessibility and functional depth of the system. A central theme was the desire for emotional interactivity, such as having the Tamagotchi respond to user input, simulate empathy, or communicate basic emotional states. Many also wished for more personalizable visual elements, including the ability to select preferred animals, styles, or symbolic motifs. Features such as naming, sound integration, motion, or seasonal variations were suggested to enhance engagement and foster long-term identification with the virtual companion. Participants also voiced concerns: some feared that overly strong emotional attachment to a digital figure could lead to dependency, while others worried that abstract or stylized images might trigger unintended negative associations. Ethical considerations such as data protection, transparency of AI-generated content, and clinical framing were also raised. Furthermore, the need for clearer integration into therapeutic settings—for instance, as part of an established treatment plan or in collaboration with therapists—was mentioned repeatedly.

6.5 Discussion

The evaluation results underscore the central importance of personalization in fostering emotional engagement and therapeutic relevance. Crucially, emotional resonance was not solely linked to the final visual output, but also to the co-creation process itself. Participants frequently described the interactive design of their Tamagotchi as meaningful, enjoyable, and motivating. The ability to shape visual attributes and iteratively refine the outcome significantly enhanced their sense of ownership and connection. This indicates that the personalization process plays a critical role in building engagement, beyond the symbolic or aesthetic qualities of the resulting image. Most participants preferred their personalized Tamagotchis over the pre-generated ones and often described them as emotionally fitting, supporting the conceptual foundation of the prototype.

The study also demonstrated the technical feasibility of the approach, even though further refinement is needed to ensure consistent output quality and semantic accuracy. Some categories were more intuitively interpretable than others. Sequences featuring animals were generally easier to understand, likely due to familiar symbolism and clearer visual cues. In contrast, abstract or plant-based imagery posed greater challenges. Furthermore, image series with three states were generally interpreted more successfully than those with four, suggesting that increased complexity may reduce clarity in perceived progression.

The overarching idea of a personalized, AI-generated Tamagotchi as a therapeutic tool was positively received by the majority of participants. Most appreciated the symbolic representation of change and motivation, though some raised concerns. These included doubts about emotional depth, questions about sustained motivation over time, and a perceived mismatch for certain user groups. Some participants also expressed ethical reservations, particularly around emotional dependency and data privacy.

7. Conclusion

This study explored the use of generative AI to create personalized virtual companions aimed at fostering emotional engagement and supporting therapy adherence. The findings underscore that personalization is central to the effectiveness of such interventions, not only in the creation of tailored outputs, but also in the co-creative process itself.

Future work should focus on advancing the technical aspects of the system. This includes moving beyond static 2D representations to more complex formats, such as 3D visuals and dynamic behavioral states. Additionally, the ability to simulate Tamagotchi-like behaviors and integrate such companions into healthcare systems in a secure and scalable way remains an important development goal.

While the results highlight the promise of generative AI for fostering engagement, they also underscore unresolved challenges that extend beyond technical refinement. Longitudinal research is needed to determine whether emotional attachment to virtual companions can be sustained over time and meaningfully influence adherence outcomes. Equally important are the ethical implications: designing companions that motivate without fostering unhealthy dependency, ensuring transparency in how AI-generated representations are created, and safeguarding user data in clinical contexts. Addressing these concerns will be critical for translating the concept of personalized Tamagotchis into responsible, clinically relevant practice.

Ethics Declaration: This research did not involve sensitive personal data, medical interventions, or vulnerable populations. Therefore, formal ethical clearance was not required. Participation in the study was voluntary and anonymized. Informed consent was obtained from all participants.

AI Declaration: AI tools, specifically ChatGPT and DALL·E 3, were used in the design and implementation of the research prototype. Additionally, ChatGPT was used as a writing assistant for drafting and editing parts of this paper under the full direction and review of the authors. The interpretation of findings and all critical assessments were carried out by the authors.

References

Alazraki, L., Ghachem, A., Polydorou, N., Khosmood, F., and Edalat, A. (2021) 'An Empathetic AI Coach for Self-Attachment Therapy'. in 2021 IEEE Third International Conference on Cognitive Machine Intelligence (CogMI) [online] held December 2021. 78–87. available from <http://arxiv.org/abs/2209.08316> [30 January 2025]

Anghel, L.A., Farcas, A.M., and Oprean, R.N. (2019) 'An Overview of the Common Methods Used to Measure Treatment Adherence'. Medicine and Pharmacy Reports [online] available from <https://medpharmareports.com/index.php/mpr/article/view/1201> [30 January 2025]

Ashrafi, N., Neuhaus, V., Vona, F., Peperkorn, N.L., Shiban, Y., and Voigt-Antons, J.-N. (2024) Effect of External Characteristics of a Virtual Human Being during the Use of a Computer-Assisted Therapy Tool. arXiv:2403.09544. arXiv. available from <http://arxiv.org/abs/2403.09544> [30 January 2025]

Baumel, A., Muench, F., Edan, S., and Kane, J.M. (2019) 'Objective User Engagement With Mental Health Apps: Systematic Search and Panel-Based Usage Analysis'. Journal of Medical Internet Research 21 (9), e14567

Castillo, A.F., Davis, A.L., Fischhoff, B., and Krishnamurti, T. (2021) 'Digital Medicines for Adherence Support: A Conceptual Framework and Qualitative Study of Adherence among Chronically Ill Patients'. Health Informatics Journal 27 (5), 14604582211059463

Deci, E.L. and Ryan, R.M. (1985) Intrinsic Motivation and Self-Determination in Human Behavior [online] Boston, MA: Springer US. available from <http://link.springer.com/10.1007/978-1-4899-2271-7> [16 May 2024]

Ehlken, C., Ziemssen, F., Eter, N., Lanzl, I., Kaymak, H., Lommatzsch, A., and Schuster, A.K. (2020) 'Systematic Review: Non-Adherence and Non-Persistence in Intravitreal Treatment'. Graefe's Archive for Clinical and Experimental Ophthalmology 258 (10), 2077–2090

Färber, A., Spindler, A. de, Moser, A., and Schwabe, G. (2023) Closing the Loop for Patients with Chronic Diseases - from Problems to a Solution Architecture. in [online] held 2023. available from <https://www.computer.org/csdl/proceedings-article/ichi/2023/026300a361/1SN7vkhT3MY> [26 June 2025]

Fitzpatrick, K.K., Darcy, A., and Vierhile, M. (2017) 'Delivering Cognitive Behavior Therapy to Young Adults With Symptoms of Depression and Anxiety Using a Fully Automated Conversational Agent (Woebot): A Randomized Controlled Trial'. JMIR Mental Health 4 (2), e7785

Forrester (2015) The Customer Emotions Driving CX Success [online] available from <https://www.forrester.com/report/the-customer-emotions-driving-cx-success/RES129194> [26 June 2025]

Hevner, A.R. (2007) 'A Three Cycle View of Design Science Research'. Scandinavian Journal of Information Systems 19 (2)

Hoffman, H.G., Chambers, G.T., Meyer, W.J., Arceneaux, L.L., Russell, W.J., Seibel, E.J., Richards, T.L., Sharar, S.R., and Patterson, D.R. (2011) 'Virtual Reality as an Adjunctive Non-Pharmacologic Analgesic for Acute Burn Pain during Medical Procedures'. Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine 41 (2), 183–191

Johnson, D., Deterding, S., Kuhn, K.-A., Staneva, A., Stoyanov, S., and Hides, L. (2016) 'Gamification for Health and Wellbeing: A Systematic Review of the Literature'. Internet Interventions 6, 89–106

Lauria, N. (2025) Laurinin/Tamagotchi: Github [online] available from <https://github.zhaw.ch/laurinin/Tamagotchi> [7 July 2025]

Lauria, N., Moser, M., and Keller, T. (2025) TamagotchiCreator. [online] available from <https://osf.io/7qpr5/> [11 July 2025]

Lavine, G. (2020) Using Virtual Reality to Treat Real Pain [online] available from <https://heal.nih.gov/news/stories/virtual-reality> [25 March 2024]

McKinsey (2025) Generative AI in Healthcare: Current Trends and Future Outlook [online] available from <https://www.mckinsey.com/industries/healthcare/our-insights/generative-ai-in-healthcare-current-trends-and-future-outlook> [26 June 2025]

Michie, S., van Stralen, M.M., and West, R. (2011) 'The Behaviour Change Wheel: A New Method for Characterising and Designing Behaviour Change Interventions'. Implementation Science: IS 6, 42

Midyett, L.K. (2023) 'One Size Fits All Versus Individualized Medicine in Type 1 Diabetes Management'. Diabetes Technology & Therapeutics 25 (S3), S-42-S-47

Moser, M. (2024) No Pain Is Gain - Digital Support of Pain Therapy for Chronic Orofacial Pain. [online] available from <https://osf.io/nystv/> [9 October 2024]

Moser, M. and Keller, T. (2025) Increasing Therapy Adherence through Emotionalization [online] IADIS. available from <https://digitalcollection.zhaw.ch/handle/11475/32692> [26 June 2025]

Ning, Y., Teixayavong, S., Shang, Y., Savulescu, J., Nagaraj, V., Miao, D., Mertens, M., Ting, D.S.W., Ong, J.C.L., Liu, M., Cao, J., Dunn, M., Vaughan, R., Ong, M.E.H., Sung, J.J.-Y., Topol, E.J., and Liu, N. (2024) 'Generative Artificial Intelligence and Ethical Considerations in Health Care: A Scoping Review and Ethics Checklist'. The Lancet Digital Health 6 (11), e848–e856

Peffers, K., Tuunanen, T., Rothenberger, M.A., and Chatterjee, S. (2007) 'A Design Science Research Methodology for Information Systems Research'. Journal of Management Information Systems 24 (3), 45–77

Rejula, V., Anitha, J., Belfin, R.V., and Peter, J.D. (2021) 'Chronic Pain Treatment and Digital Health Era-An Opinion'. Frontiers in Public Health [online] 9. available from <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2021.779328/full> [26 March 2024]

Religioni, U., Barrios-Rodríguez, R., Requena, P., Borowska, M., and Ostrowski, J. (2025) 'Enhancing Therapy Adherence: Impact on Clinical Outcomes, Healthcare Costs, and Patient Quality of Life'. Medicina 61 (1), 153

Scholz, P.D.S.S., Laura and Teetz, L. (2021) So finden chronisch Kranke gute Medizin-Apps [online] available from <https://www.apotheken-umschau.de/e-health/gesundheitsapps/so-finden-chronisch-kranke-gute-medizin-apps-840195.html> [16 April 2024]

Six, S.G., Byrne, K.A., Tibbett, T.P., and Pericot-Valverde, I. (2021) 'Examining the Effectiveness of Gamification in Mental Health Apps for Depression: Systematic Review and Meta-Analysis'. JMIR Mental Health 8 (11), e32199

The Lancet Regional Health – Europe (2023) 'Embracing Generative AI in Health Care'. The Lancet Regional Health - Europe 30, 100677

Vervloet, M., Linn, A.J., van Weert, J.C.M., de Bakker, D.H., Bouvy, M.L., and van Dijk, L. (2012) 'The Effectiveness of Interventions Using Electronic Reminders to Improve Adherence to Chronic Medication: A Systematic Review of the Literature'. Journal of the American Medical Informatics Association: JAMIA 19 (5), 696–704

Vitodata (n.d.) Chronische Krankheiten Monitoring Mit Software Vitomed [online] available from <https://www.vitodata.ch/de/digitale-arztpraxis/disease-management-medizinisches-monitoring> [16 April 2024]

Wechsler, T.F. and Mühlberger, A. (2024) 'Einsatz von Immersion und Virtueller Realität in der Psychotherapie'. DNP – Die Neurologie & Psychiatrie 25 (3), 28–33

WHO (2024) Non Communicable Diseases [online] available from <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases> [23 June 2025]

Yim, D., Khuntia, J., Parameswaran, V., and Meyers, A. (2024) 'Preliminary Evidence of the Use of Generative AI in Health Care Clinical Services: Systematic Narrative Review'. JMIR Medical Informatics 12 (1), e52073

Yoker, Ü. (2023) 'Der digitale medizinische Begleiter erinnert an Diät und Training'. Impact ZHAW [online] available from <https://impact.zhaw.ch/de/artikel/der-digitale-medizinische-begleiter-erinnert-an-diaet-und-training> [29 November 2023]