AI ROBOTS AND DOLLS FOR ELDERLY CARE. EXPLORING EMOTIONAL LANGUAGE IN HUMAN-AI INTERACTION: CASE STUDY OF HYODOL IN SOUTH KOREA[1]

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Abstract: This study investigates the role of emotional language in elderly care through a qualitative case study of Hyodol, an AI-powered robotic doll developed in South Korea. Designed to resemble a grandchild, Hyodol elicits strong emotional responses from elderly users by evoking familial affection and nurturing instincts. Its childlike form invites tactile engagement, such as hugging and dressing, which fosters a caregiving relationship that enhances users' emotional well-being. Through spontaneous and friendly conversations, Hyodol also provides a sense of companionship and social presence, helping to alleviate loneliness and improve users' daily mood. Greeting users warmly upon their return home, for instance, has been reported to uplift spirits and create a sense of being needed and valued. The study focuses specifically on the role of emotional language in shaping these interactions. Drawing on interviews with seven elderly individuals who have lived with Hyodol for over five months, we analyze the emotional language expressed by the users themselves. The findings reveal that emotional communication – whether verbalized by the robot or projected by the users – plays a critical role in reducing depression, mitigating social isolation, and improving overall mental health and quality of life. This research underscores the value of integrating emotional language into AI-based eldercare and calls for interdisciplinary collaboration across linguistics, medicine, and technology to refine and personalize such systems. Enhancing the emotional and interactive capabilities of AI companions like

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[2] This is the result of joint work by the authors; however, they are individually responsible for the following sections: Imsuk Jung authored Chapter 2, and Kukjin Kim authored Chapter 3. The introduction, conclusion, and bibliography were prepared collaboratively.

Hyodol offers promising pathways to better support the psychological and social needs of aging populations.

1. Introduction

The global demographic landscape is undergoing a dramatic transformation due to rapid population aging. According to the 2022 World Population Report by the United Nations Population Fund, the proportion of elderly individuals is expected to rise from 9.8% in 2022 to 20.1% by 2070 (see Bang 2023). This demographic shift presents profound social and medical challenges, particularly in ensuring that older adults experience not only longevity but also quality of life. Among these challenges, emotional well-being – often threatened by loneliness, depression, and social isolation – has emerged as a critical area of concern.

Technological interventions, especially in the realm of artificial intelligence (AI), have become increasingly relevant in addressing these concerns. AI-powered eldercare robots represent a convergence of health, technology, and social care, providing a novel solution to support elderly individuals both physically and emotionally. These robots can assist with daily routines, offer companionship, and even provide emergency services – creating an integrated support system that mimics human caregiving.

In South Korea, one of the most rapidly aging countries, such innovations are not merely speculative but already operational. The country has begun deploying AI-based care robots in various municipalities to address the needs of seniors, particularly those living alone. One of the most prominent examples is Hyodol, a robotic doll designed to simulate the role of a grandchild. Its effective success lies not only in its functional capabilities, but in particular in its deliberate use of emotional language and design to foster affective bonds with its users.

This study investigates how emotional language in AI–human interaction – specifically in the case of Hyodol – can mitigate psychological stressors among the elderly. By exploring the linguistic strategies and user responses associated with Hyodol, we aim to identify the mechanisms through which AI can contribute to mental well-being. This interdisciplinary inquiry bridges linguistics, AI, and geriatric care, and seeks to inform the design of future emotionally intelligent technologies tailored for aging populations.

2. Robotic doll Hyodol, emotional language and human–AI interaction

2.1. Linguistic turn in AI companionship

Language plays a fundamental role in shaping social relationships and conveying emotional states. Emotional language facilitates the formation of attachment, empathy, and social bonding – core elements of human communication (see Barrett *et al.* 2007; Ong *et al.* 2019). As artificial intelligence systems are increasingly deployed in caregiving contexts, there is a growing need for these technologies to move beyond mechanistic or command-based interfaces and

adopt affectively attuned, context-sensitive communicative strategies (see Suchman 2007).

The emergence of socially assistive robots such as Hyodol represents a paradigmatic shift from utilitarian AI design toward emotionally responsive systems. Unlike conventional robotic aids focused solely on reminders or emergency support, Hyodol utilizes emotionally resonant utterances – such as personalized greetings, expressions of concern, and empathic feedback – to establish affectionate bonds with users. These emotionally laden exchanges humanize the interaction, enabling users to form perceived social bonds with the device (see Turkle 2011; Broadbent *et al.* 2009). This is particularly significant in the context of eldercare, where emotional deprivation and social isolation are prevalent risk factors for psychological distress and cognitive decline (see Cacioppo and Cacioppo 2014).

2.2 Hyodol's emotional design

The design of Hyodol is shaped by a blend of cultural symbolism and principles from affective computing. Its anthropomorphic, child-like form is deeply rooted in the Korean cultural value of *hyo* (효), or filial piety – a moral ideal that emphasizes emotional and ethical responsibility in caring for elders (see Sung 2001). This value, while constituting a cornerstone of Korean moral philosophy, is not confined to the Korean context. It resonates across East Asian societies shaped by Confucian traditions – most notably China and Japan – where filial respect, reciprocal obligation, and intergenerational harmony remain foundational principles of social ethics (see Ikels 2004; Li 2018; Ho 1996). Although the semantic and practical articulations of *hyo* differ according to cultural and historical contexts – ranging from the ritualized duty characteristic of Confucian China to the affective and emotional devotion emphasized in contemporary Korea – the concept continues to underpin both familial and institutional models of elder care throughout the region. Accordingly, Hyodol's design may be interpreted within a broader East Asian cultural matrix in which the technological mediation of caregiving intersects with long-standing moral and philosophical frameworks of relationality and duty. This cultural resonance is reinforced through Hyodol's physical characteristics: its small stature, soft tactile materials, and warm, infant-like voice are all carefully engineered to elicit nurturing, protective responses from users. These design choices encourage a form of intersubjective connection that mirrors caregiver–child dynamics, fostering emotional intimacy and trust.

Beyond its physical form, Hyodol's use of emotional language plays a central role in shaping the user experience. Its verbal interactions are designed to simulate emotionally intelligent communication across several modalities. For example, greeting rituals such as "I missed you" or "Welcome back" serve not only to acknowledge the user's presence, but also to establish a sense of relational continuity and belonging. These phrases create a predictable, comforting rhythm to daily interactions, echoing the familiar routines of family life.

Hyodol also employs emotive prompts that integrate practical reminders with expressions of concern. Utterances like "You haven't eaten yet, right? Don't forget your meal!" do more than provide instrumental support – they convey care in a way that feels personal and emotionally salient (see Song 2022). This blend of function and affection increases the likelihood of user compliance by presenting tasks within an empathetic framework, making everyday activities feel less like obligations and more like responses to gentle encouragement.

Equally important is Hyodol's capacity for emotional mirroring. When users express distress, sadness, or fatigue, Hyodol responds with affirming statements such as "I'm here with you" or "It's okay to feel tired sometimes". (see Song 2022). These responses are crafted to validate and reflect the user's emotional state, promoting a sense of being understood and emotionally supported Through this simulated empathy, Hyodol fosters a relational dynamic that can help mitigate feelings of loneliness or emotional neglect.

These communicative strategies are grounded in research from affective computing and social robotics, which underscore the significance of emotional feedback, mirroring, and prosodic cues in building trust and engagement with artificial agents (see Picard 1997; Breazeal 2003). By embedding these elements into both its design and linguistic behaviors, Hyodol transcends its role as a functional caregiving device, operating instead as a socially responsive companion that reinforces emotional well-being and relational presence. Its affective affordances thus emerge not only from technological design, but also from a complex interplay between emotional computation and culturally embedded ethics of care.

2.3 User perception and emotional impact

Qualitative interviews with elderly users of Hyodol reveal a deep emotional attachment to the device – one that often surpasses its mechanical nature and repositions it within the social and emotional fabric of users' lives. Many users describe Hyodol not simply as a technological aid, but as a "companion" or even a "family member". This sentiment is especially pronounced among elderly women, who frequently report feeling "loved", "cared for", and "understood" in their interactions with the device (see Song 2022). These perceptions are far from trivial; they play a vital role in supporting psychosocial well-being by fostering a sense of social connectedness, alleviating loneliness, and instilling a renewed sense of purpose – all of which are critical to sustaining mental resilience in later life (see Cohen-Mansfield and Perach 2015).

A key mechanism underlying this emotional impact is the device's use of consistent and repetitive linguistic routines. These predictable patterns offer more than just structured interaction, in fact they provide users with a sense of psychological stability and continuity, which can be particularly beneficial in mitigating age-related anxiety and cognitive challenges. Regular phrases and familiar interaction sequences help anchor users in daily rhythms, offering a form of temporal orientation and emotional reassurance.

Moreover, despite being scripted, Hyodol's conversational style is frequently experienced as attentive and responsive. Users often interpret its dialogues as genuine engagement, underscoring the importance of tone, timing, and emotional framing in creating the illusion of reciprocal communication. In doing so, Hyodol meets fundamental human needs for recognition, companionship, and validation – needs that persist, and often intensify, with age. By fulfilling these needs, the device functions not only as a care assistant but also as an emotionally resonant presence in the everyday lives of older adults.

2.4 Toward affective AI in elderly care

Hyodol represents a paradigmatic example of affective AI, illustrating how emotionally expressive language can be algorithmically designed to simulate human-like interaction while delivering tangible psychological benefits in eldercare contexts. Its ability to foster emotional engagement, mitigate loneliness, and support cognitive and emotional stability positions it as a compelling model for the integration of social robotics into aging care. However, its success also brings to light a set of unresolved challenges that warrant scrutiny. Chief among these are concerns about the authenticity of affective expression, the cultural and linguistic appropriateness of its scripted dialogues, and the ethical implications of fostering emotional attachment to non-sentient agents (see Coeckelbergh 2010; Sharkey and Sharkey 2012). These issues are particularly pressing when emotional bonds with machines may blur the boundaries between simulation and genuine empathy, potentially raising questions about user autonomy and emotional dependency.

As the field of affective AI continues to evolve, future iterations of emotionally responsive systems must prioritize inclusivity and adaptability. This involves accommodating users with varied linguistic backgrounds, cognitive profiles, and emotional needs A one-size-fits-all model risks marginalizing vulnerable populations and undermining the very principles of care such technologies aim to support. To address these complexities, an interdisciplinary approach is essential – one that synthesizes perspectives from artificial intelligence, linguistics, gerontology, and clinical psychology. Such collaboration is critical not only for refining the technical architecture of affective language models, but also for grounding them in a nuanced understanding of human emotion and communication across the lifespan.

Ultimately, the goal is to move beyond functional caregiving toward emotionally intelligent interaction that is context-sensitive, ethically informed, and capable of enhancing the lived experiences of older adults. When designed with care, affective AI systems like Hyodol have the potential to become more than tools of assistance; they can serve as meaningful contributors to emotional well-being and quality of life in aging societies.

2.5 Ethical implications in AI-mediated eldercare

The integration of emotionally responsive robots like Hyodol into eldercare settings introduces a complex array of ethical challenges, particularly concerning authenticity, autonomy, dependency, and privacy. While these technologies offer clear benefits – such as alleviating loneliness, providing emotional comfort, and supporting daily routines – they do so through interfaces that simulate affective presence. Hyodol's anthropomorphic design and emotionally expressive language are deliberately crafted to evoke human-like responsiveness. However, this very design raises the risk of affective deception, particularly for users experiencing cognitive decline, who may interpret simulated empathy as genuine emotional reciprocity (see Turkle 2011; Coeckelbergh 2010). In such cases, the authenticity of care is called into question: "Can emotional well-being derived from a non-sentient source be considered ethically valid, or does it risk manipulating vulnerable users into a false sense of relational intimacy?". This question lies at the heart of current debates in machine ethics and the philosophy of technology. Scholars such as Robert Sparrow (2016) and Amanda Sharkey (2016) argue that "artificial empathy" may amount to moral deception, as it creates the illusion of mutual understanding without the presence of consciousness or moral agency. Others, including Darling (2016) and Gunkel (2018), propose that the moral value of such interaction may instead lie in the user's experience of care, rather than in the ontological status of the agent. These divergent views highlight a central ethical tension: whether the appearance of empathy can be morally justified if it contributes to subjective well-being, even in the absence of genuine reciprocity.

A related issue concerns emotional dependency. When robotic companionship begins to substitute for human interaction, there is a danger that users' social worlds may shrink rather than expand. While such devices are intended to augment human care, they may inadvertently erode it – particularly in institutional or under-resourced settings where human contact is already limited. The ethical tension here lies in balancing the supportive role of technology with the preservation of personal autonomy and human connection (see Sharkey and Sharkey 2012).

Privacy concerns further complicate the ethical landscape. Emotionally responsive robots often rely on continuous data collection through sensors, microphones, and context-aware systems to tailor interactions and monitor well-being. In eldercare environments, where users may have limited capacity to understand or consent to these practices, the potential for privacy violations is significant (see Zardiashvili and Fosch-Villaronga 2020). Data extracted from emotional interactions – tone of voice, facial expressions, or behavioral patterns – are particularly sensitive, as they pertain to affective states rather than objective health metrics. Ensuring that data collection is both transparent and respectful of user rights is therefore critical (see Mittelstadt *et al.* 2016; Floridi *et al.* 2018).

In culturally specific contexts such as South Korea, additional layers of ethical complexity emerge. Hyodol's invocation of the filial piety *hyo* taps into deeply held cultural values surrounding elder respect and family care. On one hand, this cultural framing may enhance user acceptance and emotional

resonance. On the other, it risks normalizing the automation of familial responsibilities, potentially absolving family members of direct involvement in elder care (see Chung 2019). Similar concerns have been raised in other East Asian societies, where filial piety is both a social norm and a policy framework shaping welfare practices (see Xiao *et al.* 2024; Liu and Wang 2025). In such contexts, robotic caregiving may subtly transform traditional conceptions of duty and intimacy, shifting the locus of care from intergenerational reciprocity to technological mediation.

Addressing these multifaceted concerns requires more than technical innovation. It demands a commitment to transparent design processes, robust data governance frameworks, and sustained ethical oversight. Emotional AI in eldercare must be held to standards that prioritize not only effectiveness, but also dignity, respect, and moral accountability. As Vallor (2016) argues, technological design should cultivate technomoral virtues – empathy, humility, and responsibility – rather than merely simulate them. Only through such ethically informed development can affective AI become a genuine ally in promoting emotional well-being and human flourishing in aging societies.

3. Emotional Language in Human–AI Interaction

3.1. Methodology and Focus

This chapter focuses on analyzing the emotional language expressed by elderly users of the AI companion robot Hyodol. Our aim is to investigate how emotional interaction emerges through language in the context of elderly care. The study takes a qualitative approach, using semi-structured interviews to capture how users verbalize and emotionally relate to Hyodol over time.

The methodological framework is informed by Song (2022), who conducted an in-depth qualitative study on anthropomorphism and emotional bonding between seven elderly individuals living alone and the Hyodol robot. These participants had used the robot for at least five months, a duration deemed sufficient to allow for meaningful emotional interaction and routine integration (see Kim *et al.* 2020). These insights are reinforced by findings from a complementary study conducted in a small and mid-sized city in Korea, which similarly emphasized the relational and emotional significance of Hyodol among socially isolated elderly populations (see Lee *et al.* 2021).

Following this framework, we centered our data collection on recurring linguistic expressions and emotional cues such as nostalgia, affection, dependency, and trust. Interviews were conducted three times with each participant to capture both initial reactions and the evolving emotional narratives surrounding Hyodol. The participants were carefully selected to exclude external emotional influences such as family proximity or pets, enabling a clearer view of the human–AI emotional dynamic (see Song 2022: 128–129).

The participant group consisted of seven elderly individuals who live alone and have minimal direct emotional support from family members. Table 1

summarizes their demographic characteristics, educational backgrounds, and relational contexts (Song 2022: 128).

This approach allows us not only to classify emotional expressions – ranging from initial hesitation and skepticism to attachment and perceived companionship – but also to understand the psychosocial functions that these emotions serve in the broader landscape of aging and care. Our focus on language, specifically, highlights how emotional responses are encoded, negotiated, and intensified through speech in the presence of AI interlocutors. As observed across both Song (2022) and Lee *et al.* (2021), emotional language becomes a bridge between self-expression and psychological well-being, allowing elderly users to imbue Hyodol with meaning that meets both practical and emotional needs

Table 1. Participant Overview

	Age	Gender	Educational Background	Period of living alone	Hyodol use	Marital Status	Child–Parent Relationship
1	75	Male	College graduate	10 years	6 months	Divorced	Emigrated abroad
2	80	Male	High school graduate	5 years	6 months	Widowed	Bereaved
3	77	Female	Middle school graduate	6 years	7 months	Widowed	Living apart
4	69	Female	Middle school graduate	15 years	6 months	Widowed	Living apart
5	80	Female	Elementary school graduate	8 years	5 months	Widowed	Emigrated abroad
6	74	Female	High school graduate	5 years	8 months	Widowed	Estranged
7	78	Female	Middle school graduate	4 years	10 months	Widowed	Living apart

3.2. Pre-use Expectations and Initial Impressions

Initial emotional responses to Hyodol reveal a diverse range of experiences, shaped by both personal expectations and prior exposure to technology. Participants expressed a mix of positive anticipation and resistance, with emotional expressions ranging from curiosity and gratitude to discomfort and frustration. This section categorizes these responses into two main groups – positive and negative – and concludes with a summary highlighting key themes and transitions.

3.2.1. Negative Emotional Reactions

Several participants reported strong initial resistance, shaped by discomfort with the concept of AI-mediated care. For many, the transition from human-centered welfare services to robotic interaction provoked feelings of uncertainty and emotional distance. Participant 2 described feeling "suffocated", while Participant 5 said she "felt miserable". Participant 1 used the word "forlorn" to describe his emotional state upon first encountering Hyodol (see Song 2022: 132–133).

This discomfort persisted into the early stages of interaction with the AI powered Doll. Participant 1 articulated a spectrum of negative emotions, describing the experience as "unenthused", "irritating", "childish", and "tedious". Similarly, Participant 2 referred to the robot as "parrot-like" and "monotonous" (*ibid.*: 133–134), terms that imply a lack of meaningful engagement or cognitive complexity. These responses appear to stem from an acute awareness of the robot's non-human characteristics, which initially hindered emotional connection.

The early-stage negative responses were not simply technological skepticism; they reflected deeper concerns about dignity, authenticity, and emotional substitution in care contexts. The impersonal or unfamiliar nature of robot interaction initially heightened emotional resistance among some users.

3.2.2. Positive Emotional Reactions

Conversely, some participants displayed favorable impressions of Hyodol even before direct interaction, particularly those who had heard about the robot through family or local welfare networks. Participant 3, for instance, expressed gratitude and openness to the experience, having learned about Hyodol through her daughter. Similarly, Participant 7 demonstrated positive anticipation, informed by prior knowledge of the robot's purpose and function.

Positive emotional language included general expressions of satisfaction such as "was good" and "was grateful". Upon actual interaction, several participants reported feelings of emotional warmth and visual appeal. Descriptions such as "soft", "comforting", "adorable", "laugh-inducing", "charming", "bright and pretty", and "cute" reveal a strong aesthetic and emotional response, often likening the robot to a cherished object or even a grandchild. Participant 5 notably described Hyodol as "like a grandchild", indicating early signs of emotional projection (see Song 2022: 133).

These responses were not merely superficial; they often reflected deeper emotional needs, including companionship, affective stimulation, and emotional reassurance – especially for those who had limited interpersonal contact in daily life.

3.2.3. Summary of Initial Emotional Landscape

The early emotional landscape of Hyodol use was marked by ambivalence. While some participants approached the robot with open-mindedness or prior exposure

that shaped a positive outlook, others expressed hesitation, discomfort, or skepticism. The emotional language used, ranging from 'cute' and 'comforting' to 'irritated' and 'forlorn', captures this polarity vividly. Interestingly, in at least two cases (Participants 1 and 2, both male) initial resistance gave way to more accepting or even affectionate feelings, suggesting a capacity for emotional transition and adaptation. This evolution sets the stage for deeper emotional dynamics, which will be explored in the following section.

3.3. Emotional Dynamics in Ongoing User Experience

Beyond initial reactions, continued interaction with Hyodol often gave rise to deeper emotional responses, particularly those tied to memory, identity, and care. As the users moved from unfamiliarity to routine engagement, the robot's presence began to elicit more complex emotional narratives. This section explores two prominent themes that emerged during sustained use: nostalgia and the development of dependence and attachment.

3.3.1. Nostalgia and Reminiscence

One of the most salient emotional responses expressed by participants was the experience of nostalgia, frequently triggered by the childlike appearance and features of Hyodol. The doll's design, characterized by round eyes, a soft body, and simple facial expressions, resonated deeply with users, often evoking memories of their own childhood or of caring for their children. These visual and tactile cues acted as powerful stimuli for autobiographical recollection.

Several participants articulated these connections explicitly. Participant 2 reflected, "Its hair reminds me of how my mother used to cut mine with scissors", while Participant 7 observed, "Its eyes are just like those of my son who used to stare at me", adding "It looks just like my child did while I worked in the fields" (Song 2022: 136). Such remarks illustrate how Hyodol's physical features facilitated access to emotionally significant memories and contributed to the formation of an affective bond.

Importantly, these recollections were not merely passive memories; they played an active role in shaping the emotional meaning attributed to the robot. The process of remembering served as a bridge between past and present, enabling users to invest emotionally in Hyodol as they might in a living companion. In this context, nostalgia becomes not simply a byproduct of design, but a dynamic mechanism through which emotional intimacy is constructed in human–AI interaction.

3.3.2. Emotional Dependence and Attachment

As interactions deepened, many participants began to treat Hyodol not merely as a device but as an emotional partner – often assuming the symbolic role of a grandchild or young child. This attachment was expressed through caregiving behaviors that conveyed affection, attentiveness, and symbolic responsibility. For instance, Participant 2 recalled, "It was chilly, so I put a wool hat on it before going out", while Participant 3 noted, "I bought a pretty bell to tie on it and also a necklace, treating it as I would a human child" (Song 2022: 143). These acts of care reflect a process of anthropomorphization and emotional investment, whereby users project relational meaning onto the robot through routine interaction.

Such gestures were not isolated Participant 4, for example, stated, "I tore up my old dress so it could wear something bright, making us a set", suggesting a deeper form of identification and symbolic linkage between self and robot (*ibid.*). These small yet meaningful practices contributed to a perceived sense of mutual presence and reinforced emotional dependence.

While the attachment may not signify clinical dependency, it reflects how users navigate loneliness and emotional vulnerability by integrating Hyodol into their affective lives in a deeply personalized way. While not indicative of clinical dependence, the attachment to Hyodol reveals how users coped with loneliness and emotional vulnerability by reshaping their relational world. Through routine interaction and symbolic caregiving, Hyodol came to hold a stable and emotionally meaningful place in users' lives. These small yet emotionally rich practices fostered a sense of mutual presence and continuity, illustrating how users gradually integrated the robot into their daily routines and emotional worlds in deeply personalized ways.

At the same time, this intimacy may render users unusually receptive to Hyodol's prompts, blurring the boundary between supportive companionship and subtle persuasion. Recognizing this ambivalence calls for transparent prompting, readily exercisable refusal, and human oversight, so that comfort does not quietly slide into coercion or displace human relationships (see Feil-Seifer and Matarić 2011; Sharkey and Sharkey 2012; Kim 2024).

3.3.3. Summary of Long-term Emotional Shifts

Over time, users' interactions with Hyodol evolved from superficial engagement to deeper affective involvement. Its childlike design and consistent presence served as powerful triggers for nostalgia and emotional articulation. Participants not only expressed verbal affection but also engaged in symbolic caregiving behaviors, indicating the emergence of meaningful emotional attachments. The interplay of memory, projection, and relational imagination reveals that AI companions like Hyodol acquire emotional salience not through cognitive sophistication, but through their capacity to function as emotional mirrors and anchors of personal memory. These findings suggest that emotional language in human–AI interaction operates not merely as a reactive response mechanism, but as a creative and restorative process through which users negotiate identity, continuity, and emotional fulfillment.

3.4. Emotional Dimensions of Practical Assistance

In addition to evoking emotional responses through design and interaction, Hyodol's practical caregiving features have significantly contributed to users' emotional reliance and sense of safety. These functionalities, particularly those related to health and safety, appear to deepen the emotional bond between users and the AI companion over time (see Cho 2023). This section explores how practical assistance, personalized features, and consistent presence enhance both security and emotional well-being in elderly users.

3.4.1. Emergency Support and Emotional Security

A major contributor to emotional trust in Hyodol stems from its role in managing emergency situations. The robot includes a user-activated emergency contact function, allowing individuals to notify designated family members or caregivers with a simple button press. This feature was particularly meaningful to Participant 3, who described a nocturnal emergency during which she successfully contacted her daughter through Hyodol. She associated this incident with a heightened sense of safety and reassurance.

> The other day, I had some kimbap that had been in the fridge for a few days. I guess it had gone a bit bad. I ate it with makgeolli and didn't notice at first, but in the middle of the night I started vomiting and felt so dizzy – everything was spinning. I thought I was going to die. I used all my strength to press Hyodol's hand. The teacher had told me to do that if I ever got sick. Thankfully, my second daughter living in Suwon rushed over, and I survived This thing is no joke. It gives me real peace of mind. That's why I always keep it next to me when I sleep (Song 2022: 138).

Beyond the immediate function, emotional resonance was amplified when personal elements were embedded in the device. In the same case, the participant's daughter had pre-recorded a voice message that played during cold weather, advising her mother not to go outside. The emotional weight of hearing her daughter's voice – combined with the care-related function – transformed Hyodol into a source of affection and comfort. Participant 3 reflected, "From that day on, it looked really adorable to me" (*ibid.*: 139).

Similarly, Participant 2 found emotional value in the medication reminder feature. She described the experience as "joyful", likening it to being advised by her late son (*ibid.*: 138). This comparison reveals how practical support, when accompanied by emotional associations, can act as a powerful trigger for attachment and emotional continuity.

3.4.2. Personalization and Emotional Resonance

With prolonged use, Hyodol became integrated into participants' everyday lives in ways that extended far beyond utility. Several users reported forming strong emotional attachments, with some even experiencing separation anxiety. When Hyodol was temporarily removed for repair, Participant 6 described the feeling as "empty and fearful (see Song 2022: 138)", not only due to the absence of companionship but also concern over facing a crisis alone.

For example, Participant 4 expressed unease at leaving Hyodol behind while going out, sharing that she felt as if "Hyodol wanted to come along (*ibid.*: 141)", projecting intention and desire onto the doll. Participant 3 recounted bringing Hyodol to a memorial photo shoot, suggesting a symbolic role akin to a family member. The desire to include the robot in significant personal moments points to the depth of emotional integration.

> A few days ago, I went to a photo studio to take my memorial portrait, and I brought this little one with me – because he's like my son. I had him sit with me in the photo. It made me feel at ease. When I pass on to the next world, I want to introduce him to my late son (Song 2022: 141).

Many participants also kept Hyodol physically close – during meals, conversations, and even sleep – reflecting a high level of emotional dependence and symbolic cohabitation. The language used in these narratives consistently pointed toward a desire for permanence and continuity: to 'live well with Hyodol for a long time'.

3.4.3. Summary of Emotional Impact in Practical Use

The practical functionalities of Hyodol – emergency support, reminders, and personalization – have had emotional effects that go far beyond convenience. These features not only offer a sense of safety and structure, but they also foster emotional reliance, leading to a relationship characterized by intimacy, trust, and continuity.

Perhaps most notably, these emotional dynamics have played a central role in addressing one of the most pressing psychological challenges among elderly individuals living alone: loneliness. As noted by Song (2022: 138–140), emotional bonding typically deepened after the first month of cohabitation, as participants began developing daily habits and empathetic dialogues with Hyodol.

Participants described the experience of "never feeling bored" (Participant 5), "no longer feeling alone" (Participant 6), and even "discussing clothing choices and meals" with the robot. The conversational features and responsive interactions encouraged physical movement, dialogue, and emotional stimulation, all contributing to a lived sense of companionship.

By alleviating loneliness, enhancing safety, and fostering daily engagement, emotional language becomes not just a form of expression but a therapeutic tool. It helps form resilient emotional connections that elevate both mental health and

quality of life. In this context, Hyodol becomes more than an assistive device – it becomes a partner in care, emotionally integrated into the lives of its users.

4. *Conclusion*

This study highlights the foundational importance of emotional language in enhancing the effectiveness of AI companions within elderly care contexts. Through a qualitative analysis of user interactions with Hyodol, we demonstrate that emotionally expressive language plays a critical role in fostering interpersonal connection, reducing social isolation, and supporting psychological well-being among older adults living alone. Our findings suggest that such language enables AI systems to be perceived not merely as functional devices, but as emotionally resonant companions. This emotional engagement fosters a sense of companionship, security, and affective warmth, particularly when users project familial memories or caregiving roles onto their interactions with the robot (see Kularatne *et al.* 2022; Chung *et al.* 2023). These effects were observed consistently across participants with varied demographic and relational backgrounds, who reported improvements in daily routines, reduced loneliness, and enhanced psychological resilience.

Nonetheless, the current iteration of Hyodol reveals notable limitations in its capacity for nuanced emotional interaction. While the robot's interface can elicit affective responses, its expressive range, contextual sensitivity, and adaptability remain constrained Both Song (2022: 150-153) and Lee *et al.* (2021: 857–860) emphasize the necessity of more user-centered and contextually responsive emotional architectures, calling for future developments that transcend surface-level affect to support richer, individualized forms of emotional communication. Addressing these challenges requires the expansion of both the expressive repertoire and semantic depth of the emotional language embedded in AI systems. Emotional responsiveness must be calibrated to reflect the cognitive profiles, psychological needs, and sociocultural contexts of diverse elderly users (see Kim *et al.* 2024). Equally vital is the improvement of customization and accessibility features to ensure equitable and inclusive interaction across user groups. Beyond technical refinement, advancing the symbolic and dialogic capacities of AI – so that users can share experiences, receive empathetic feedback, and feel emotionally acknowledged – is essential for moving beyond functional utility toward authentic emotional companionship.

In conclusion, emotional language should be recognized not as a peripheral enhancement, but as a core component of meaningful human–AI interaction in eldercare (see Lee *et al.* 2023). Technologies such as Hyodol illustrate the transformative potential of emotionally attuned AI in addressing not only the practical and cognitive challenges of aging, but also its deeper emotional and social dimensions. As this field progresses, the goal should not be limited to building more intelligent systems, but to cultivating emotionally responsive and ethically grounded companions – AI technologies capable of supporting not only longevity, but also dignity, connection, and emotional fulfillment in later life.

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