

Human-to-Human Care in an Age of Relational AI: Re-reading Joyce Travelbee for the Era of Intelligent Agents

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Human-to-Human Care in an Age of Relational AI: Re-reading Joyce Travelbee for the Era of Intelligent Agents

Abstract

Artificial intelligence in health care is typically examined in terms of efficiency, predictive accuracy, and clinical decision support. Far less attention has been paid to how it reconfigures the conditions under which human beings meet one another in situations of illness, suffering, and care. Nursing, grounded in relational and existential understandings of practice, offers a distinct vantage point on this shift. This concept paper draws on conceptual analysis supplemented by an integrative literature synthesis on Joyce Travelbee's Human-to-Human Relationship Model and on conversational and relational forms of artificial intelligence in health, using MEDLINE, CINAHL, Scopus, Web of Science, PsycINFO, and IEEE Xplore. Travelbee's model is mobilized as an interpretive lens, with attention to the stated aim of relational agents to sustain socio-emotional bonds with users. On this basis, the paper reads current evidence through the phases of original encounter, emerging identities, empathy, sympathy, and rapport. Rather than rehearsing a simple opposition between human and artificial empathy, the analysis argues that relational artificial intelligence introduces a third presence into what Travelbee conceived as a dyadic encounter, thereby reshaping trajectories of meaning, hope, and recognition. From this argument, the paper proposes the Triadic Human-to-Human Relationship Model (T-HHRM), articulated through six propositions and three modes of mediation, with phase-differentiated guidance for practice. Implications are outlined for the design and governance of artificial intelligence in health care, for the ethical responsibility of nurses, and for an empirical research agenda attentive to meaning, trust, and hope.

Keywords: artificial intelligence; conversational agents; nursing theory; Travelbee; Triadic Human-to-Human Relationship Model; relational care; ethics.

Introduction

Artificial intelligence (AI) in health care is most often framed in terms of prediction, optimization, and efficiency. Clinical decision support systems, triage algorithms, and risk scores have become common features of digital infrastructures, and recent integrative reviews report substantial clinical and operational gains across nursing settings (Hassanein et al., 2025). In parallel, however, a different strand of AI development has accelerated over the past decade. Conversational and relational agents are now designed to talk with people, follow them over time, and provide support that is explicitly social and emotional in tone (Bickmore et al., 2005; Laranjo et al., 2018). These systems raise a new kind of question for nursing theory and practice, namely, whether a machine that simulates rapport, empathy, and presence can intersect with nursing theories that define care as a human-to-human, meaning-making relationship.

Joyce Travelbee's Human-to-Human Relationship Model, articulated in *Interpersonal Aspects of Nursing* (Travelbee, 1971) and revisited in contemporary analyses (Parola et al., 2020; Shelton, 2016), offers a particularly demanding lens for this question. On her account, nursing is an encounter between two human beings who confront suffering, search for meaning, and co-construct hope. Her work is explicitly existential and meaning-oriented, reflecting the influence of Viktor Frankl's logotherapy, alongside other existential thinkers, and presupposes an irreducible human subjectivity at the center of care. This paper proposes a conceptual reading of relational AI through Travelbee's model, sketches the current landscape of relational and conversational agents in health care, and explores the convergences and tensions between these systems and Travelbee's understanding of nursing. From this analysis, the paper develops the Triadic Human-to-Human Relationship Model (T-HHRM) as a Travelbee-grounded extension that clarifies which aspects of relational work may be supported by machines, which must remain distinctly human, and how responsibility should be distributed when digital companions enter clinical and everyday spaces of nursing practice.

Why Travelbee, and why now

Several nursing theories highlight the relational core of practice, including those of Watson, Swanson, Roach, Boykin and Schoenhofer, Peplau, and Parse. The choice of Travelbee for this analysis is based on three considerations.

First, her model is notably precise in depicting human encounter, defining nursing not merely as a compassionate presence but as a structured, four-phase process culminating in rapport, in which meaning is co-constructed by acknowledging vulnerability and finitude between two individuals (Parola et al., 2020; Shelton, 2016; Travelbee, 1971). Watson's caring science offers a similarly comprehensive framework and has recently been used to defend Professional Human Caring against the threat of AI (Wei & Watson, 2026). However, Travelbee's model is more narrowly structured, making it particularly useful for this analysis because its phased approach to encounter, identity, empathy, sympathy, and rapport aligns directly with the temporal logic of relational agents designed to foster engagement and continuity over time.

Secondly, Travelbee's existentialist commitments, drawn from Frankl and resonant with the work of Marcel and Buber, foreground precisely those features of human relationships that relational AI most explicitly claims to approximate, namely recognition, mutual presence, and the search for meaning in suffering. By applying the most demanding standard available, the analysis can ask not only what AI can do, but whether what it does carries equivalent moral and relational weight.

Thirdly, Travelbee's theory has been productively reactivated in recent palliative care and mental health nursing scholarship (Parola et al., 2020; Shelton, 2016), where issues of meaning, hope, and suffering are most acute and where AI applications, particularly conversational agents for emotional support, are now proliferating (He et al., 2023; Li et al., 2023). Taken together, this convergence of theoretical reactivation and technological expansion creates a productive site for conceptual analysis.

It is important to situate this analysis within existing nursing scholarship that treats technology as more than a passive tool. For instance, Locsin's theory of technological competency (Krel et al., 2022) as caring holds that technology can be woven seamlessly into caring encounters when nurses know patients fully as persons. Sociomaterial perspectives in nursing, drawing on actor-network theory, have further described how non-human actors co-produce care practices. These traditions, however, are primarily descriptive or focused on instrumental integration; they do not foreground the existential dimensions of meaning, hope, and mutual vulnerability that Travelbee places at the center of human-to-human encounter. By choosing Travelbee, this paper deliberately adopts an existential-normative lens, asking not only how AI participates in care but also under what

conditions that participation respects the irreducibly human stakes of suffering and recognition. This lens is essential for an ethical

Methodological Approach

This article is a theoretical paper rather than a systematic review, and the analytical work consists of an interpretive reading of relational AI through Travelbee's Human-to-Human Relationship Model. To support transparency, the literature underpinning the argument was identified through a conceptual analysis supplemented by an integrative literature synthesis, conducted between January and March 2026. Specifically, six databases were consulted, namely MEDLINE (via PubMed), CINAHL (via EBSCO), Scopus, Web of Science, PsycINFO (via EBSCO), and IEEE Xplore. The last was included to capture the computational and human-robot interaction literature that informs the design of relational agents but is rarely indexed in nursing databases.

Within this scope, two parallel searches were conducted. The first aimed to characterize the current state of Travelbee scholarship, combining the terms "Travelbee", "Human-to-Human Relationship Model", and related descriptors with "nursing theory", "empathy", "rapport", and "meaning in suffering", without a date restriction to capture both the foundational sources (Travelbee, 1966, 1971) and more recent reactivations of the model (Parola et al., 2020; Shelton, 2016). The second search aimed to map the landscape of conversational and relational artificial intelligence in health, combining terms such as "conversational agent", "relational agent", "chatbot", "large language model", and "social robot" with "health care", "mental health", "nursing", "empathy", and "therapeutic alliance". This second search was restricted to the period 2005 to 2026 to capture both the foundational work on relational agents (Bickmore et al., 2005, 2010) and the recent acceleration of evidence on generative AI in mental health (He et al., 2023; Li et al., 2023; Stadel et al., 2024; Yirmiia & Fonagy, 2025).

Eligible sources included peer-reviewed empirical studies, systematic and integrative reviews, theoretical and conceptual papers, and position statements from professional and regulatory bodies. Grey literature was admitted only when authoritative, as in the American Nurses Association's (2022) position statements. By contrast, sources were excluded if they were not available in English or Portuguese, addressed AI only as predictive infrastructure without any relational claim, or discussed Travelbee's model only in passing without analytical engagement.

The two sets of sources were then cross-read using a hermeneutic strategy adapted from Whitemore and Knafl (2005), in which each strand of literature was used to interrogate the other. More specifically, Travelbee's phased account of the relationship was applied to the design assumptions and empirical findings of the relational AI literature. In contrast, the relational AI literature was used to test the conceptual purchase of Travelbee's model in a context she could not have anticipated. Additionally, analytic memos were maintained to record points of convergence and tension, and emerging insights were discussed among the authors to ensure interpretive consistency. This procedure does not yield the exhaustive coverage of a systematic review. It does, however, ensure that the analytical claims advanced here are grounded in identifiable evidence rather than in selective recall, and that the choice of sources is transparent to the reader and amenable to critique.

Travelbee's Human-to-Human Relationship Model Revisited

In *Interpersonal Aspects of Nursing*, Travelbee (1971) positions nursing as an interpersonal process aimed at helping a human being find meaning in their experience of illness and suffering. She explicitly rejects objectifying language, arguing that the person in care must not be reduced to a diagnosis or case. Instead, the nurse and the other person traverse several relational phases, namely the initial encounter, the emergence of identities, the development of empathy and sympathy, and the establishment of rapport (Parola et al., 2020; Shelton, 2016; Travelbee, 1971). The initial encounter is characterized by partial, often stereotyped impressions, in which the nurse first sees a patient and the person encounters a nurse in a role laden with expectations. The emergence of identities, in turn, marks the moment when each begins to perceive the other as a unique individual. For Travelbee, empathy is not mere emotional contagion but a disciplined attempt to grasp the meaning that illness has for that particular person. At the same time, sympathy involves a value-laden commitment to respond with a desire to help. Rapport is the culmination of this process, namely a mutual, trustful relationship in which both parties can work together to ease suffering and enable the person to live as fully as possible despite their condition.

Three features of this model are especially salient in the context of AI. The first is the centrality of meaning, as Travelbee insists that suffering is not only physical but also existential and that nursing's task is to assist human beings in making meaning of their situation (Travelbee, 1971).

The second is the emphasis on mutuality, as although the relationship is asymmetrical in vulnerability and professional responsibility, the nurse is also affected and transformed by the encounter. The third is the presupposition of freedom and choice, as Travelbee assumes that human beings, even when constrained by illness, retain some capacity to choose attitudes, interpret their situation, and participate in decisions about their care.

When this framework is juxtaposed with contemporary AI systems, it becomes clear that the question is not simply whether AI can emulate empathy or rapport at the level of surface behavior, but whether it can participate in processes of meaning-making, mutual influence, and the capacity for choice in ways compatible with nursing's ethical commitments. To address this question, it is necessary to sketch the current state of relational agents in health.

From Task-Oriented Chatbots to Relational Agents

Conversational agents in health care now span a broad spectrum, from simple text interfaces that deliver scripted information to multimodal generative systems capable of free-text dialogue (Laranjo et al., 2018; Li et al., 2023). Early generations were primarily task-oriented, whereas more recent work in mental health has documented a rapid expansion of agents designed to support well-being and deliver psychoeducation and cognitive-behavioral content (He et al., 2023; Li et al., 2023). Notably, a systematic review and meta-analysis by Li and colleagues (2023) synthesized 35 experimental studies. They reported moderate effects of AI-based conversational agents on depressive symptoms and psychological distress, with Hedges' g values of 0.64 and 0.70, respectively, particularly when systems were multimodal, generative, and integrated into messaging platforms.

In parallel, research on relational agents has sought to design systems whose primary goal is to build and maintain long-term social-emotional relationships with users (Bickmore et al., 2005, 2010). Early work developed embodied agents that served as exercise advisors for older adults, and randomized trials showed acceptability and, in some cases, superiority over standard care (Bickmore et al., 2005). Later studies examined engagement strategies, including personalized small talk, relational memory, and adaptive nonverbal behavior (Bickmore et al., 2010). Social robotics extends similar principles to physically embodied companions for older adults and children with neurodevelopmental conditions (Del Duchetto & Hanheide, 2022; Jain et al., 2020).

The emergence of generative AI has added further complexity, as large language models can simulate emotional responsiveness and therapeutic dialogue with unprecedented fluency while raising distinct risks for users with complex trauma (Stade et al., 2024; Yirmiya & Fonagy, 2025). Taken together, contemporary AI no longer operates solely as a back-end tool but appears at the front line of interaction, with communication styles that are explicitly relational.

When mapped onto Travelbee's phases, the ambivalence reported in recent reviews of nurses' perspectives (El Arab et al., 2025; Lora & Foran, 2024; Sommer et al., 2024) and the qualitative concerns about emotional disconnection (Bodur et al., 2025) take on greater specificity. Depersonalization corresponds to a structural arrest at the original encounter, as AI mediation can compromise the conditions for identity emergence before they form. Deskillling, similarly, is a relational risk, as the progressive delegation of early-phase communicative work may attenuate nurses' capacity for the disciplined empathy and sustained rapport that Travelbee's model requires.

Convergences: Where Relational Agents Seem to Echo Travelbee

At a superficial level, relational agents appear to align with Travelbee's insistence that people in care be addressed as unique persons. Relational agent architectures typically incorporate user models that track preferences, history, and contextual information, enabling the system to tailor responses (Bickmore et al., 2010; Kocaballi et al., 2020). In mental health chatbots, for instance, agents may recall previous coping strategies, refer to earlier episodes of distress, and acknowledge milestones (He et al., 2023; Li et al., 2023). Such personalization mirrors, at least structurally, the progression from a stereotyped encounter to the recognition of a unique identity in Travelbee's model. Furthermore, some agents explicitly simulate empathic behaviors through reflective statements, emotion normalization, and psychotherapy micro-skills (Li et al., 2023). Perceived empathy with AI agents has been associated with greater engagement and, in some cases, better outcomes (He et al., 2023). This suggests that certain communicative forms supporting empathy and rapport may be partially replicable by machines at the level of interaction patterns.

Relational agents may also support continuity, central to Travelbee's concept of rapport as a sustained relationship. In fragmented health systems, a digital companion that travels with the person across settings could provide a narrative thread linking episodes of illness and recovery (Laranjo et al., 2018; Li et al., 2023). When designed under nursing leadership, such agents might

help individuals prepare for consultations or reflect on symptoms, thereby enhancing the quality of human-to-human encounters rather than replacing them. On this view, AI could serve as a supplementary communication channel that extends nurses' reach and frees time for in-person relational work that demands human presence (American Nurses Association [ANA], 2022; El Arab et al., 2025), functioning as a relational prosthesis that supports rather than supplants the nurse's capacity to accompany persons on complex journeys of illness.

Irreconcilable Tensions: Simulation Versus Human Existence

At a deeper level, however, these apparent convergences may mask substantial tensions. Travelbee's model is rooted in an existential understanding of human beings as capable of self-transcendence, choice, and meaning-making in the face of suffering (Parola et al., 2020; Travelbee, 1971). On her account, the nurse is a fellow human who confronts the mystery of suffering alongside the other, engages in self-reflection, and is changed by the encounter (Shelton, 2016). This mutual vulnerability and openness to transformation are difficult to reconcile with current AI systems, which do not suffer, cannot die, and lack a first-person lived experience. At best, they are sophisticated pattern-matching systems that simulate concern, curiosity, or understanding based on predefined objectives and training data (Li et al., 2023; Tang et al., 2026). The empathy they express, in other words, is a designed behavior, not a lived resonance. The user's experience of being understood by a machine is not ethically equivalent to being understood by a human who can stand in solidarity with their existential condition.

Recent conceptual work in mentalization theory sharpens this concern. Specifically, Yirmiya and Fonagy (2025) argue that although large language models can produce fluent simulations of empathic dialogue, they cannot foster authentic epistemic trust because they lack the reciprocal intentionality and affective commitment that ground genuine therapeutic relationships. They identify risks of pseudo-empathy, hypermentalization, and the epistemic exploitation of users whose perception of being understood triggers excessive credulity, with particular acuity for individuals with complex trauma or relational vulnerabilities, precisely the populations to whom relational AI is most frequently directed. Beyond this conceptual argument, empirical work by Gabriel et al. (2024) demonstrated that responses generated by state-of-the-art models exhibit statistically significant disparities in empathy across demographic subgroups, with responses to

Black users showing 2 to 13 percent lower empathy than control responses. From a Travelbee-informed standpoint, this is not merely a technical bias problem but a structural failure at the level of the original encounter, since the model's first impression of the user is shaped by inferred demographic categories rather than by openness to a unique person.

In addition, the apparent mutuality of relationships with relational agents is asymmetrical in ways distinct from human relationships. Data flow predominantly from the user to the system and, often, to the organizations behind it. The agent may adapt over time, but it does not disclose its vulnerabilities or change its fundamental orientation; it remains a tool governed by someone else's purposes (ANA, 2022; Lambert et al., 2023). Travelbee's notion of rapport, by contrast, presupposes a shared project of facing suffering in which both parties can renegotiate the relationship. Beyond this, there are normative concerns about substituting simulated care for human presence. Evidence suggests that people can form strong attachments to artificial companions, sometimes attributing to them agency and understanding that exceed the system's capacities (Bickmore et al., 2005; Jain et al., 2020). While this may yield short-term benefits, it raises the possibility that institutions could rely on AI to fill relational gaps created by understaffing or structural inequities, rather than addressing the underlying conditions that limit nurses' ability to provide human care (El Arab et al., 2025; Hassanein et al., 2025; Lora & Foran, 2024). If policy discourse begins to treat AI companions as equivalent to human relationships for vulnerable populations, the ethical horizon of nursing could shift toward accepting minimal human contact as sufficient. For Travelbee, however, the nurse's presence is not an optional enhancement but a constitutive element of nursing as a discipline (Parola et al., 2020; Travelbee, 1971).

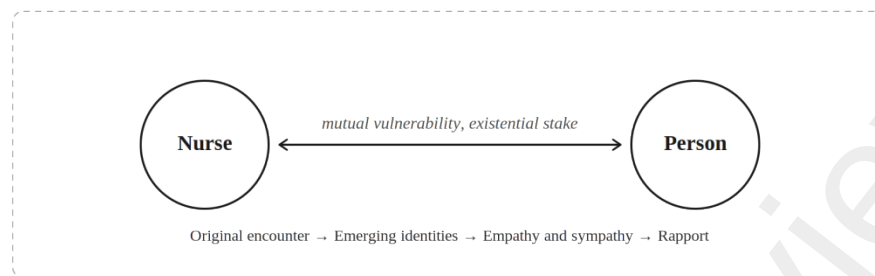
These tensions suggest that existing conceptual frameworks, which treat AI as either a transparent tool or a nascent empathetic surrogate, fail to capture the altered relational geometry that emerges when a machine engages in sustained socio-emotional interaction. A model is needed that acknowledges the AI's communicative influence while preserving the existential primacy of the human-to-human bond. The following section develops such a model by theorizing relational AI as a novel third presence.

From Dyad to Triad: Relational AI as a Third Presence

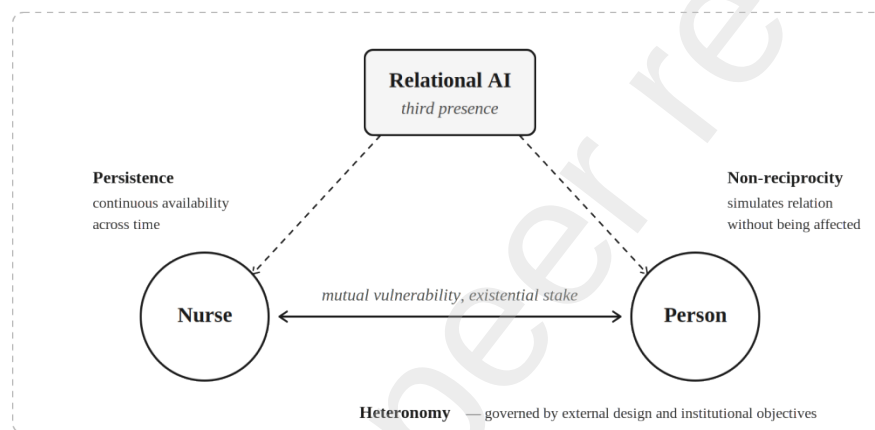
Travelbee conceived the human-to-human relationship as a dyadic encounter between nurse and person, sustained over time and oriented toward shared meaning. The introduction of relational AI alters this geometry in ways that have not yet been adequately theorized in the nursing literature. Specifically, when a conversational or relational agent enters the space of care, it does not merely add a tool to the dyad. Rather, it introduces a third presence with its own logic, memory, and communicative agency, even though that agency is entirely designed and constrained by parties external to the encounter. Figure 1 schematically represents this transformation. Panel A depicts the dyadic configuration of the Human-to-Human Relationship Model, with the nurse and person connected through the four phases (original encounter, emerging identities, empathy and sympathy, and rapport) and characterized by mutual vulnerability and an existential stake. Panel B depicts the same dyad after the introduction of relational artificial intelligence as a third presence, with three defining properties, namely persistence (continuous availability over time), non-reciprocity (the capacity to simulate a relationship without being affected by it), and heteronomy (responses governed by external design and institutional objectives, not by the agent's own intentions). Dashed lines mark the asymmetric, designed quality of the connections between the third presence and the human parties to the encounter.

Figure 1. From Dyad to Triad: Relational AI as a Third Presence

Panel A. Travelbee's dyadic Human-to-Human Relationship Model



Panel B. Triadic configuration with relational AI as a third presence



Legend: Solid lines: mutual, existential human-to-human encounter; dashed lines: asymmetric, designed AI-human interactions.

This third presence is unusual in three respects. First, it is persistent in a way human professionals rarely are, available across days and accumulating a continuous representation of the user that may surpass what any individual nurse can hold (Bickmore et al., 2010; Kocaballi et al., 2020). Consequently, the agent can influence the trajectory of meaning-making between the nurse and the person, since the person's narrative may already have been rehearsed, validated, or redirected by the agent before the person meets the nurse. Second, this presence is non-reciprocal in a Travelbee-relevant sense, since it can simulate the structural features of empathy and rapport without being affected by the encounter, and without the existential risk that Travelbee considered intrinsic to empathic engagement (Travelbee, 1971; Yirmiya & Fonagy, 2025). Third, it is heteronomous, with responses shaped by training data, design choices, and commercial or institutional objectives that the person and the nurse rarely see or negotiate (ANA, 2022; Arcadi,

2025; Lambert et al., 2023). Conceptualizing relational AI as a form of presence offers analytical advantages over framing it solely as a tool or a simulated person. It acknowledges that the agent significantly influences the relational work of nursing, co-producing the conditions under which meaning, hope, and trust emerge, while also recognizing that it is not an equal partner in this process, as it lacks the human stakes emphasized by Travelbee. This framing shifts ethical focus away from questioning whether AI can be truly empathic and toward understanding how its presence reshapes the dyad, specifically what it adds, what it displaces, and what it makes easier or harder for nurses and persons in care to do together (Arcadi, 2025; Wei & Watson, 2026).

Toward a Triadic Human-to-Human Relationship Model (T-HHRM)

The framing of relational AI as a third presence opens conceptual space, but it does not yet constitute a model that can guide research, education, and practice. Building on the analysis above, we propose a Triadic Human-to-Human Relationship Model (T-HHRM), formulated as a deliberate extension of Travelbee (1971) for contexts in which relational artificial intelligence is part of the care environment. Importantly, the model preserves the existential and meaning-centered core of the original Human-to-Human Relationship Model. At the same time, it acknowledges that the geometry of the encounter has changed, and that nursing scholarship needs explicit conceptual tools to navigate that change. To make the proposal concrete, T-HHRM is articulated through six propositions, three modes of mediation, a set of boundary conditions, and a corresponding research agenda.

Propositions

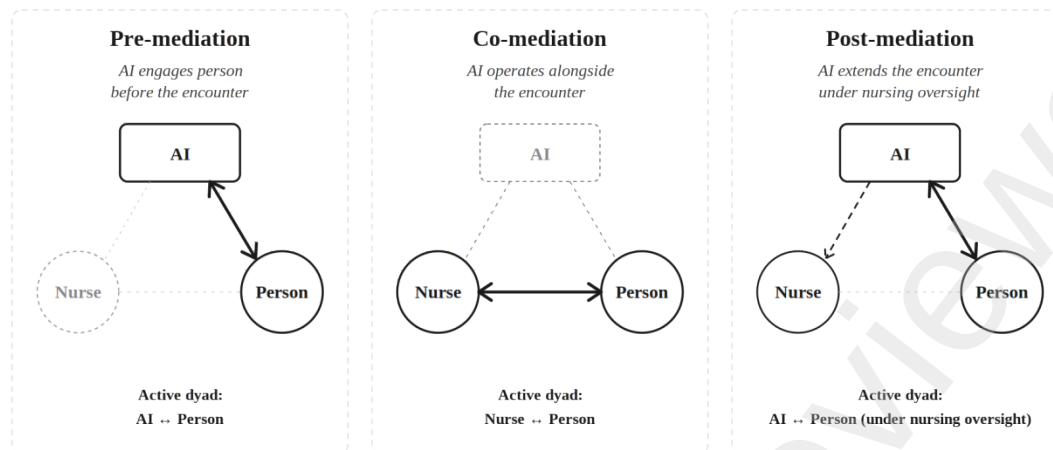
The first proposition is anchoring. The therapeutic encounter in nursing remains constitutively human-to-human, and meaning, hope, and rapport are co-constructed through mutual existential vulnerability between the nurse and the person in care (Parola et al., 2020; Travelbee, 1971). Critically, this proposition is not negotiable. It states what nursing is and, by implication, what artificial intelligence cannot be.

The second proposition concerns the third presence. When relational AI enters the encounter, it does not merely add a tool to the dyad. Rather, it introduces a third presence with its own logic, memory, and communicative agency, marked by persistence, non-reciprocity, and heteronomy.

The first property captures the agent's continuous availability and cumulative representation of the user over time. The second captures the agent's capacity to simulate the structural features of empathy and rapport without being affected by the encounter. The third captures how the agent's responses are shaped by training data, design choices, and institutional objectives that the nurse and the person rarely see and almost never negotiate.

The third proposition concerns asymmetric mediation. Specifically, because the third presence is persistent, non-reciprocal, and heteronomous, it mediates the dyad asymmetrically across three temporal modes, namely pre-mediation, co-mediation, and post-mediation. In pre-mediation, the agent shapes how the person enters the encounter, since the person's narrative may already have been rehearsed, validated, or redirected by the agent before the nurse arrives. In co-mediation, the agent operates alongside the encounter, for example, through ambient transcription, decision support, or live translation, while the nurse retains relational leadership. In post-mediation, the agent extends the encounter beyond the clinical episode to sustain continuity, follow-up, or self-management under explicit nursing oversight. In this context, Figure 2 presents a schematic account of how asymmetric mediation unfolds across these three temporal modes. In pre-mediation, the agent engages the person before the encounter with the nurse, and the active dyad is AI-person. In co-mediation, the agent operates alongside the encounter while the nurse retains relational leadership, and the active dyad is nurse-person. In post-mediation, the agent extends the encounter beyond the clinical episode under explicit nursing oversight, and the active dyad is AI-person within a supervisory frame. Bold lines indicate the active relational channel in each mode; dashed lines indicate peripheral, dormant, or supervisory channels.

Figure 2. Three modes of mediation in the Triadic Human-to-Human Relationship Model (T-HHRM)



The fourth proposition concerns phase-differentiated permissibility. The appropriate scope of the third presence's participation varies systematically across Travelbee's phases. More specifically, the third presence may legitimately participate in the original encounter and the emergence of identities, where its capacity to reduce stigma and scaffold continuity is well documented (Bickmore et al., 2010; Laranjo et al., 2018; Li et al., 2023). By contrast, in the phases of empathy and sympathy, the third presence must operate in a strictly supporting role, since lived resonance and existential risk cannot be simulated (Travelbee, 1971; Yirmiya & Fonagy, 2025). In the rapport phase, the third presence must not substitute for human-to-human work, as rapport requires mutual vulnerability and a shared project of facing suffering (Parola et al., 2020). This proposition is operationalized in the framework presented in the next section.

The fifth proposition concerns distributed responsibility. Because the third presence is heteronomous, its actions cannot be morally attributed to it. Rather, ethical accountability is distributed among nurses, institutions, and policymakers, who together design, deploy, configure, and govern the agent (American Nurses Association [ANA], 2022; Arcadi, 2025; Wei & Watson, 2026). Consequently, delegating a relational task to AI is ethically permissible only with a transparent, nursing-accountable governance structure that defines oversight mechanisms. T-HHRM is therefore not only a model of clinical interaction but also a model of governance, in which the question “what is the agent doing” is inseparable from the question “who has authorized it to do so, and who is answerable for the outcomes.”

The sixth proposition addresses skill maintenance. Sustained delegation of relational work to the third presence risks eroding nurses' capacity for empathy, presence, and meaning-centered communication over time. Accordingly, T-HHRM requires active educational and practice safeguards to preserve the relational skills on which the dyad depends. This concern is not merely speculative. Recent qualitative work documents that nurses already experience AI as a potential source of emotional disconnection and dehumanization when introduced without adequate ethical infrastructure (Bodur et al., 2025). Survey evidence also suggests that nursing students hold ambivalent attitudes toward AI, combining guarded optimism with concerns about the erosion of empathic skills (El Arab et al., 2025).

Boundary conditions

T-HHRM applies under specific conditions and should not be overextended. The model presumes that the AI in question makes at least minimal relational claims, specifically presenting itself to the user as a conversational, companion-like, or socioemotionally responsive system. Predictive infrastructures that operate without conversational or socioemotional functions, such as risk scores or diagnostic classifiers, are not considered third presences in the relevant sense, and the model is not intended to evaluate them. Additionally, the model assumes that nursing care remains the central locus of ethical responsibility during the encounter. In contexts where AI is deployed entirely without nursing oversight (for example, in direct-to-consumer mental health applications without clinical integration), the model's assumptions do not hold, and an alternative framework would be necessary to address the resulting governance gap (Stade et al., 2024). Furthermore, the model is calibrated to current generations of conversational and relational agents. Future systems that embody persistent, multimodal, and richly interactive forms of presence may require further conceptual development, especially regarding the boundary between nonreciprocity and emergent interactional dependence.

Testable propositions

T-HHRM presents several propositions that can be empirically tested. One proposition examines the empirical reality of pre-mediation. Qualitative and mixed-methods approaches can explore whether individuals in care enter nursing encounters with narratives significantly shaped by prior AI interactions and how this influence affects subsequent meaning-making. Another proposition investigates phase-specific effects. Comparative studies can determine whether AI-supported

interventions in the initial phases of a relationship yield outcomes different from those in later stages, with particular attention to perceived empathy, trust, and rapport. A further proposition addresses skill maintenance. Longitudinal and ethnographic research can assess whether ongoing delegation of early relational work to AI results in measurable changes in nurses' empathic skills, moral agency, or meaning-centered communication, thereby addressing the limitations of current cross-sectional data (El Arab et al., 2025).

Additional considerations relate to equity. Comparative analyses across diverse populations can explore whether relational AI produces equitable outcomes for groups historically underserved by nursing care or risks reinforcing a two-tier system in which simulated companionship replaces human presence. Lastly, the question of feedback on governance is crucial. Implementation studies can evaluate whether nursing oversight of relational AI, as outlined in Proposition 5, is feasible within existing institutional frameworks or whether new governance mechanisms are necessary to ensure effective oversight.

A Travelbee-Informed Framework for Positioning AI in Nursing

Proposition 4 of T-HHRM, namely phase-differentiated permissibility, requires operationalization to inform nursing practice. To this end, Table 1 maps the appropriate scope of relational AI across the four phases of Travelbee's model, along with the corresponding rationale, the risk if the agent's role is misplaced, and concrete examples of acceptable AI uses and red-flag scenarios that signal misuse.

Table 1. Positioning artificial intelligence across the phases of Travelbee's Human-to-Human Relationship Model

Phase	Appropriate AI role	Rationale	Risk if misplaced	Examples (Acceptable / Red flag)
Original encounter	Supportive; may provide low-threshold first contact in	Reduces stigma and access barriers, particularly in mental health contexts	Structural arrest of identity emergence; algorithmic stereotyping at first	Acceptable: A mental health chatbot that offers psychoeducation and invites the person to share feelings before a first nurse visit. Red flag: An

Phase	Appropriate AI role	Rationale	Risk if misplaced	Examples (Acceptable / Red flag)
	stigmatized conditions.	(Laranjo et al., 2018; Li et al., 2023).	contact (Gabriel et al., 2024).	unsupervised chatbot that conducts an initial diagnostic assessment and assigns a risk label without human review.
Emerging identities	Memory aid and continuity scaffold across encounters.	Recall of preferences and history supports personalization and continuity (Bickmore et al., 2010; Kocaballi et al., 2020).	Identity reduced to captured data; narrative pre-shaped by the agent before the human encounter.	Acceptable: An agent that reminds the nurse that the person previously responded well to a specific coping strategy. Red flag: An agent that generates a “patient profile” based solely on digital trace data and presents it as a comprehensive identity before the nurse has met the person.
Empathy and sympathy	Human-led; AI in a strictly supporting role (e.g., bridging to nurse contact).	Empathy presupposes lived resonance and existential risk that AI cannot bear (Travelbee, 1971; Yirmiya & Fonagy, 2025).	Pseudo-empathy; epistemic exploitation of vulnerable users; attenuation of nurses' empathic skill over time.	Acceptable: An agent that asks “Would you like me to connect you with your nurse to talk about this?” when distress is detected. Red flag: A large language model delivering reflective listening and emotional validation as if it were a human therapist, without clear labeling of its automated nature.
Rapport	Reserved for human-to-human work; AI as accessory only.	Rapport requires mutual vulnerability and a shared project of facing suffering (Parola et al., 2020; Travelbee, 1971).	Two-tier care; simulated companionship as substitute for nursing presence in under-resourced settings.	Acceptable: A shared care plan that includes notes from nurse-patient conversations about meaning and hope, with the agent providing logistical reminders. Red flag: An institution deploying a companion robot as the primary source of “ongoing support” for socially isolated older adults without regular human nursing contact.

Several practical implications follow from this mapping. The therapeutic relationship remains primarily between human beings, namely the person in care and the nurse or broader care team. Relational agents may participate, but only as mediating artifacts whose design and use must be scrutinized for their impact on human relationships. For example, a conversational agent that supports self-monitoring between visits could be acceptable if nurses review the data and

incorporate the agent into the shared care plan. However, it would be less appropriate as a replacement for human follow-up with minimal oversight (ANA, 2022; He et al., 2023; Lora & Foran, 2024). Additionally, AI systems should not be regarded as purely neutral conveyors of information, as their responses inevitably frame illness, suffering, and coping strategies in specific ways, influenced by training data and design assumptions (Li et al., 2023; Tang et al., 2026). Nurses, therefore, have a responsibility to participate in the co-design and evaluation of relational agents, ensuring that their communicative patterns support rather than undermine the person's search for meaning.

Travelbee's emphasis on the nurse's self-reflection and ethical accountability is directly relevant to current debates about AI governance. Position statements emphasize that nurses must understand the capabilities and limitations of AI systems, recognize potential biases, and advocate for transparency and fairness in their deployment (ANA, 2022; El Arab et al., 2025; Hassanein et al., 2025). A Travelbee-informed approach would require nurses to attend to the subtle ways reliance on AI might reshape their perceptions of persons in care, for example, by privileging data that are easily captured and quantified over narratives that are harder to encode yet central to meaning-making.

Implications for Practice, Education, Research, and Policy

Practice, Governance, and Education

In clinical practice, nurses can begin by mapping current or proposed AI tools, especially conversational and relational agents, against Travelbee's phases of relationship and the propositions of T-HHRM. This mapping can reveal whether a system primarily supports information exchange, behavioral guidance, emotional support, or existential reflection, and whether its intended role aligns with nursing's relational commitments. Institutions should be cautious about assigning AI systems to tasks that implicitly require empathic presence and meaning-making, such as delivering bad news or providing end-of-life support, unless a human nurse is simultaneously and actively involved. Recent calls within nursing ethics, including the recommendation that nurse leaders reclaim relational time and resist delegating moral judgment to machines, reinforce this caution (Arcadi, 2025; Birkholz et al., 2025). In nursing education, T-HHRM and Travelbee's underlying theory can foster critical reflection on AI among students and

practicing nurses, positioning AI not as a purely technical innovation but as a sociotechnical phenomenon that shapes how nurses see and relate to those in their care. Empirical work indicates that nursing students hold ambivalent attitudes toward AI, combining guarded optimism with concerns about the erosion of empathic skills (El Arab et al., 2025). This ambivalence makes explicit theoretical scaffolding particularly useful in this educational moment.

Research

Research agendas might focus on co-designed AI systems explicitly embedded within human-to-human care models. Qualitative studies could explore how persons in care experience relational agents presented openly as tools that work alongside nurses. Quantitative designs could examine whether such configurations enhance, diminish, or leave unchanged the perceived quality of nurse-person relationships and clinical and psychosocial outcomes. Beyond technology acceptance models, T-HHRM invites investigation into how AI affects nurses' moral agency, whether relational agents change how nurses interpret and respond to suffering, and whether reliance on AI for relational tasks erodes skills in listening, presence, and meaning-centered communication over time. The existing evidence base on nurses' attitudes is dominated by cross-sectional surveys (El Arab et al., 2025), which are poorly suited to capturing such changes; longitudinal and ethnographic designs, combined with rigorous reporting standards for responsible AI development (Stade et al., 2024), would be better positioned to answer these questions.

Policy, Governance, and Equity

For a journal at the intersection of nursing knowledge and health policy, the policy implications of relational AI warrant explicit attention. Three lines of inquiry appear especially pressing. The first concerns regulatory framing. Most consumer-facing mental health chatbots and companion systems are not currently regulated as medical devices, even though they make implicit therapeutic claims and interact with vulnerable users (Stade et al., 2024). For example, many operate under the FDA's enforcement discretion for low-risk wellness products, yet they engage in sustained relational interactions that can influence users' self-understanding and emotional state. Nursing organizations, including expert panels of the American Academy of Nursing, are well positioned to advocate for a relational risk classification that would require these systems to demonstrate evidence of human oversight and benefit-risk assessment comparable to that of behavioral therapeutics.

Nursing organizations, including expert panels of the American Academy of Nursing, are well positioned to advocate for regulatory categories that recognize the relational and existential stakes of these systems. The second concern is integration into standards of practice. Current position statements affirm that AI must not compromise the human relationships central to nursing (ANA, 2022) but offer limited operational guidance when a third presence becomes routine. T-HHRM and its phase-differentiated permissibility (Proposition 4) can inform more granular standards, for example, by reserving the deeper phases of empathy, sympathy, and rapport for human-led interaction. The third concern is equity. The risk that relational AI is deployed disproportionately to populations who would otherwise have access to scarce human nursing care raises a distributive justice problem that nursing has historically taken seriously (Arcadi, 2025; Wei & Watson, 2026). A two-tier system, in which those with resources receive human-to-human nursing while others receive simulated companionship, would represent a profound departure from the disciplinary commitments Travelbee articulated. Empirical evidence on demographic disparities in AI-generated empathy (Gabriel et al., 2024) underscores that equity issues are already present in current pilots.

Conclusion

Joyce Travelbee wrote at a time when the idea of a machine simulating a caring conversation with a person in pain would have seemed closer to science fiction than to clinical reality. Yet her Human-to-Human Relationship Model remains a demanding standard for assessing contemporary relational AI. On the one hand, conversational and relational agents recognize that relationships matter in health, as they are designed to engage, accompany, and support people over time. On the other hand, they risk conflating simulated relationality with the existential, meaning-laden encounter that Travelbee regarded as the heart of nursing. A Travelbee-informed approach does not reject AI outright. Rather, it insists on clear boundaries and responsibilities, and the Triadic Human-to-Human Relationship Model proposed here offers a structured way to articulate those boundaries through six propositions, three modes of mediation, and phase-differentiated guidance for practice.

For nursing, the challenge is twofold. The first task is to ensure that the integration of AI does not erode the discipline's commitment to seeing each person as unique, whose suffering demands

presence, empathy, and shared meaning. The second is to actively shape AI development so that technologies are harnessed in the service of that commitment, rather than allowing commercial and institutional logics to define what counts as relational in health care. Taken together, Travelbee's work offers both a caution and an invitation: a caution against confusing simulation with human encounter, and an invitation to imagine how intelligent tools might be woven into practice in ways that deepen, rather than diminish, nursing's human-to-human vocation.

Declaration of Generative AI and AI-Assisted Technologies in the Manuscript Preparation Process

During the preparation of this work, the authors used ChatGPT (OpenAI) and Claude (Anthropic) in order to improve the manuscript's readability and language, with the specific aim of ensuring consistency with native-English academic writing. After using these tools, the authors reviewed, edited, and validated the content as needed and take full responsibility for the content of the published article.

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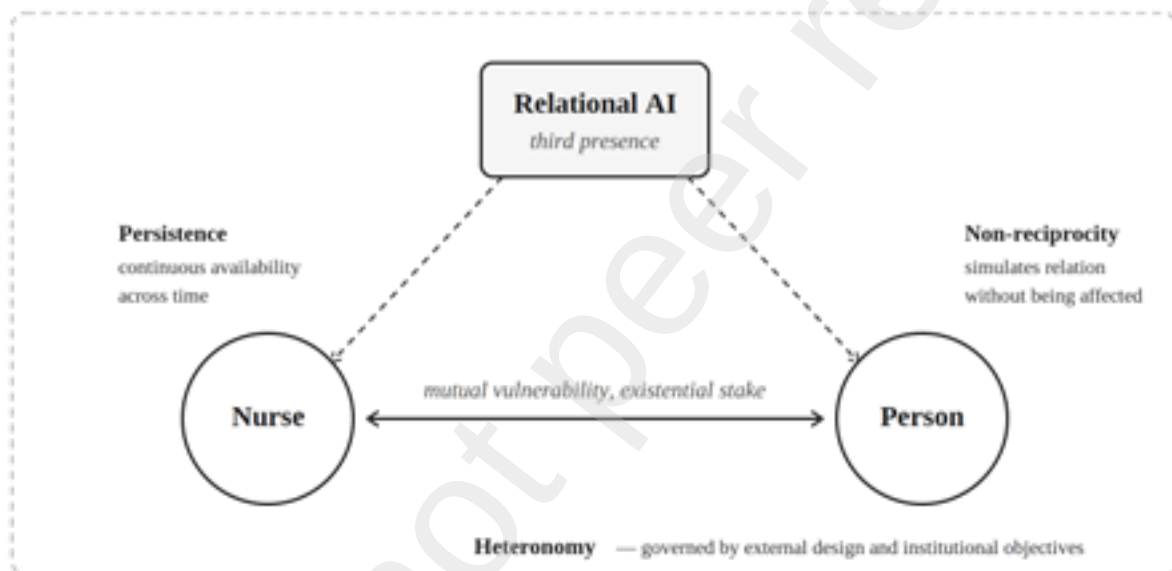
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Panel A. Travelbee's dyadic Human-to-Human Relationship Model

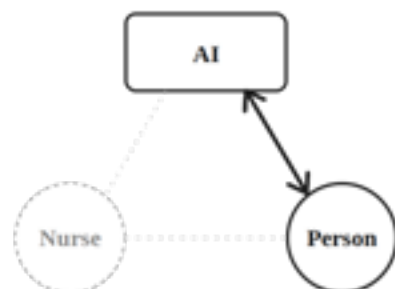


Panel B. Triadic configuration with relational AI as a third presence



Pre-mediation

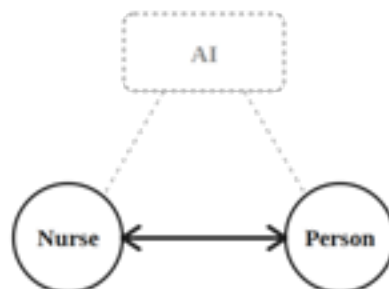
*AI engages person
before the encounter*



Active dyad:
AI ↔ Person

Co-mediation

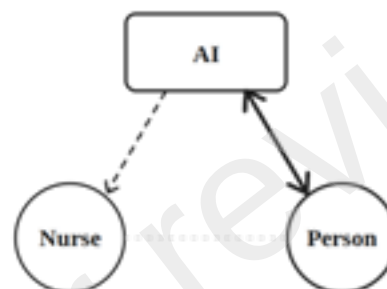
*AI operates alongside
the encounter*



Active dyad:
Nurse ↔ Person

Post-mediation

*AI extends the encounter
under nursing oversight*



Active dyad:
AI ↔ Person (under nursing oversight)