



Impact of Discourse Markers on L2 English Learners' Perceived Empathy in AI-Mediated Emotional Support Dialogues

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Abstract. This study investigated how discourse markers influence second language (L2) English learners' perceived empathy in AI-mediated dialogues, exploring the moderating roles of overall English proficiency and listening comprehension abilities. Using a within-subjects design, this study recruited 23 participants to engage in conversations with two AI psychotherapists, one of whom employed discourse markers and the other did not, and then the participants engaged in two-minute conversations with each AI psychotherapist, Psychotherapist 1 and Psychotherapist 2. Results showed that discourse markers significantly increased perceived empathy, particularly in caring, naturalness, understanding, and perspective shifting. Moreover, overall English proficiency, rather than listening comprehension, was more consistently linked to positive empathy evaluations, suggesting that learners with stronger language skills are more attuned to the interpersonal functions of discourse markers. These findings imply that discourse markers serve as politeness devices that strengthen interpersonal sensitivity and can be leveraged to improve user trust and support in AI-mediated communication.

Keywords: Discourse Markers, Empathy Perception, AI-Mediated Dialogue, Emotional Support, L2 English Learners

1 Introduction

Driven by the growing global demand for psychological support and the rapid adoption of artificial intelligence technology, the mental health landscape is undergoing a profound transformation [1]. In this new era, AI-powered chatbots have become a significant force in emotional support dialogues, becoming an integral part of the mental health ecosystem for millions of people worldwide. Platforms such as Woebot, Pi, and even general models like ChatGPT are gaining traction for their ability to provide private, emotionally supportive interactions without the necessity that users disclose their identity [2].

Among the diverse user groups, second language English learners often face the challenge of anxiety, low self-esteem, lack of self-confidence, and a lack of willingness

to take risks when communicating with people using the second language [3]. Furthermore, L2 learners often face significant barriers to accessing traditional mental health services. They often struggle to verbalize nuanced emotional states and hesitate to seek help due to concerns about failing to receive emotional support and understanding. Therefore, AI chatbots offer a low-barrier, private, and accessible psychotherapy option for seeking comfort and support. To ensure these tools are truly effective for this population, supportive interactions are crucial. In human-computer interaction, the cornerstone of effective emotional support is the user's perceived empathy [4]. Numerous studies have confirmed that perceived empathy is crucial for building user trust, encouraging self-disclosure, and fostering a positive and cooperative psychotherapy process [5]. In the context of AI, perceived empathy does not mean the machine possesses actual emotions, but rather that the user trusts the system to understand, acknowledge, and appropriately respond to their emotional state.

Thus, the central question is how to effectively convey empathy through the medium of conversation. The communication of empathy is often embedded in discourse markers (DMs) that represent subtle nuances in language. Discourse markers are words or phrases such as “um”, “you know”, “I mean”, and “actually” which serve as conversational “signposts” [6]. While they are often considered irrelevant to the core propositional content of discourse, they play a key role in interpersonal communication, such as framing information, managing the flow of conversation, and signaling the speaker's stance toward the message and the audience, thereby influencing the effectiveness of empathy [7]. However, most of the researches concerning discourse markers focus on its structural functions rather than its pragmatic purpose and interpersonal functions, such as emotional support and empathy.

This study aims to investigate the impact of discourse markers on L2 English learners' perceived empathy in emotional support conversations mediated by the AI chatbot Pi. The primary goal is to determine whether these linguistic cues enhance or hinder empathy perceptions among this specific user group, thereby providing empirical evidence for designing more culturally and linguistically inclusive AI support systems.

2 Literature Review

This review synthesizes foundational and contemporary literature across three interconnected domains to situate the present study.

2.1 Discourse Markers and Perceived Empathy

Discourse markers are a class of linguistic expressions that guide communication at the pragmatic level, such as “well”, “you know”, “I mean”, “so” and “actually”. Schiffrin defined them as means of bracketing utterance units and connecting them across multiple discourse levels: conceptual, action, and interpersonal [6]. Fraser further described DMs as procedural language that guides listeners in interpreting the relationship between the current utterance and the context of previous utterances [7].

The primary contribution of DMs lies not in the core propositional content of the message but in its contextual coherence and relational structure. These connections and structures are not simply “fillers” but rather tools for conveying interpersonal meaning. In the first language contexts, they are crucial for expressing a speaker’s stance, attitude, and emotional orientation. For example, “I mean” is often used for self-correction, demonstrating a commitment to accuracy and sincerity [6]. This is directly related to the expression of empathy. Speakers actively control the interpersonal dynamic of a conversation by using discourse markers to change tones and convey empathy.

Research on L2 learners’ perceptions of discourse markers and how listeners interpret empathy from discourse markers is scarce. Existing research in this area suggests that L2 learners often struggle to discern the subtle functions of discourse markers, sometimes interpreting them as meaningless fillers or incorrectly assigning them functions based on their native language counterparts. Though research on L2 learners’ general perceptions of discourse markers is rare enough, there is even less research specifically examining how discourse markers influence their judgments of emotion or empathy. The connection between these subtle linguistic cues and the perception of complex affective states like empathy remains a critical blind spot in L2 pragmatics research.

Meanwhile, the language proficiency of learners may also influence the perceived empathy for discourse markers. As for overall English proficiency, it shows little direct influence on how learners perceive discourse markers or judge a speaker’s empathy. Research on interactional metadiscourse in EFL writing notes no significant relationships between language proficiency and metadiscourse use once topic and other factors are considered [8]. Communication research instead emphasizes socio-emotional and interactional variables rather than learners’ global proficiency benchmarks [9].

In contrast, listeners’ listening comprehension abilities appear more possibly tied to sensitivity to DMs and perceived empathy. Experimental work shows that drawing learners’ attention to DMs improves listening to oral discourse [10]. Moreover, dynamic-assessment studies demonstrate that stronger listeners may be better at leveraging discourse cues [11]. At the same time, research on empathy and listening shows that not all listening-related factors cleanly onto empathy outcomes [9]. In short, listening comprehension abilities may matter more than overall English proficiency, but related evidence remains limited, which requires further research.

2.2 Discourse Markers and Human-Computer Interaction

Research into discourse markers within Human-Computer Interaction has increasingly focused on how DMs improve user perception, with studies indicating that contextually appropriate markers significantly boost perceived fluency, engagement, and trust, while misuse can undermine interaction quality [12]. Additionally, DMs serve essential pragmatic functions, such as managing politeness or softening disagreement, which made it necessary for systems to adapt marker usage to dialogue goals and socio-emotional contexts [13]. In all, research has increasingly focused on improving the effectiveness of supportive conversational agents.

In the field of human-computer interaction, the effectiveness of supportive conversational agents depends on their ability to generate perceptual empathy. This does not presuppose true consciousness or emotions in AI, but rather implies that the agent can understand the user's decisions and opinions without judgment, acknowledge, and respond appropriately to their emotional states. Perceived empathy is a key prerequisite for establishing a therapeutic alliance, a concept derived from traditional psychotherapy and highly predictive of positive outcomes [5]. This has led to the realization that improving empathy perceived by AI depends on a deeper understanding and application of subtle human communication patterns. Therefore, a key frontier in previous research is the exploration of language design, focusing on the subtle pragmatic cues that shape interpersonal meaning. Discourse markers, key to the expression of interpersonal interaction, provide a bridge to this problem.

2.3 Politeness Theory

Brown and Levinson's politeness theory explains how speakers manage interpersonal relationships by mitigating face-threatening acts (FTAs) [14]. The theory distinguishes between positive face, the desire for approval and acceptance, and negative face, the desire for autonomy and freedom from imposition. Communicative acts often threaten one or both aspects of face, and speakers use strategies such as positive politeness, negative politeness, off-record indirectness, or avoidance to reduce these threats. In this study, politeness theory provides a lens for understanding how discourse markers function as pragmatic devices that soften transitions, signal attentiveness, and convey relational sensitivity. Rather than serving as fillers, they help preserve face and enhance empathy in interaction. This framework is therefore central to interpreting how L2 learners perceived empathy in AI-mediated dialogues.

2.4 The Present Study

This study aims to explore how discourse markers can affect the perceived empathy, bridging the research gap in DMs and perceived empathy studies, and DMs and Human-Computer Interaction studies. The research questions are as follows:

- (1) Does the existence of discourse markers influence L2 learners' perceived empathy in conversations with AI?
- (2) What are the relationships of empathy perception to participants' overall English proficiency and listening comprehension abilities?

3 Methodology

This study adopted a within-subjects design to investigate how discourse markers influence L2 learners' perceived empathy in AI-mediated dialogue. The following sections detail the participant profile, data collection procedures, and analytical methods.

3.1 Participants

This study recruited 23 Chinese English learners with varying levels of overall English proficiency and listening comprehension, and 21 of them completed valid responses for questionnaires. All volunteers were unaware that their conversational partners were AI. They were all between 18 and 30 years old, native Chinese speakers with English as a second language, had studied English for at least nine years, and possessed basic English conversational skills.

This study divides the subjects into different levels of overall English proficiency according to their CET-4 / CET-6 score or TEM-4 / TEM-8 score, and English listening comprehension ability according to He and Chen's listening comprehension assessment methodology. Levels of overall English proficiency are shown in Table 1. The division of English listening comprehension ability will be described in detail in the Research Procedure.

Table 1. Levels of overall English proficiency

Level	CET-4 / CET-6 Score	TEM-4 / TEM-8 Score	Number
Primary	< 500	< 60	7
Intermediate	500 - 600	60 - 80	11
Advanced	> 600	> 80	3

3.2 Data Collection

Data were collected through two primary means: a quantitative questionnaire measuring perceived empathy and collect their scores of CET-4, CET-6, TEM-4 and TEM-8, and a qualitative assessment of listening comprehension. The specific measurement details are described below.

Measurement.

This study employed a repeated measures design, also known as a within-subjects design. This design allows researchers to test multiple experimental conditions in the same group of participants, thereby controlling for individual differences and improving statistical power. Each participant was tested under both experimental conditions, reducing the influence of individual differences on the results. Furthermore, compared to a between-subjects design, it requires fewer participants, making it suitable for pilot studies.

This experiment uses a questionnaire with seven questions designed according to collect data of learners' empathy perception, rated on a 1-5 scale (1:totally disagree, 5: totally agree), to assess participants' perceptions of the Psychotherapists' responses in terms of understanding feelings, providing comfort and emotional support, displaying care and compassion, using natural language, and encouraging participants to open up. The empathy perception questionnaire is adapted from Davis Interpersonal Reactivity Index (IRI), with four subscales: perspective taking (PT), fantasy (FS), empathic concern (EC), and personal distress (PD) [15]. PT reflects the cognitive ability to adopt others' viewpoints, FS measures imaginative identification with fictional characters,

EC assesses compassionate concern for others, and PD captures self-oriented distress when witnessing others' suffering.

Procedure.

This study used an AI-powered emotional therapy software called "Pi", which was instructed to act as two psychotherapists with and without using discourse markers by inputting prompts. Each participant engaged in conversations about 2 minutes with each psychotherapist, talking to Psychotherapist 1 and Psychotherapist 2 in random sequence. Both conversations discussed the same unpleasant experience related to a friend. After completing both rounds, participants completed a questionnaire, rating each Psychotherapist and reporting their overall preference.

After the participants engaged in two rounds of conversation with the AI, their understanding of the AI's responses was assessed to determine their English listening comprehension abilities. This experiment divides English listening comprehension into three levels: elementary, intermediate, and advanced according to He and Chen's listening comprehension assessment methodology: In elementary level, participants can answer basic details (such as time and place) but cannot understand emotions or complex information; In intermediate level, participants can understand the main idea and some details, such as the narrator's emotions and the general course of events. At advanced level, participants can accurately understand details and emotions and make inferences.

3.3 Data Analysis

This study collects scores for each question in questionnaires. Questionnaire data analysis was conducted using IBM SPSS Statistics 27 software. A total of 23 participants participated in the experiment, and 21 valid responses were collected for statistical analysis. The factor scores of Psychotherapist 1 and Psychotherapist 2 were analyzed using the Wilcoxon signed rank test to explore the differences in learners' empathy perception for conversations with and without discourse markers. And Spearman correlation coefficients between the factor scores of Psychotherapist 1 and Psychotherapist 2 were conducted to explore the relationships between their overall English proficiency, listening comprehension abilities, and their perceived empathy.

4 Results

The results are organized into two subsections: the impact of discourse markers on perceived empathy, and the relationships between empathy perception and participants' language skills.

Encouraging	0.328	0.199	0.166	0.002
Understanding	0.381	0.145	0.240	-0.289
Perspective Shift- ing	0.547*	-0.094	0.062	-0.091
Supportive	0.399	-0.217	0.258	-0.432

***p < 0.001, **p < 0.01, *p < 0.05. P1: Psychotherapist 1, P2: Psychotherapist 2.

In contrast, according to Table 3, for Psychotherapist 2, correlations were weaker and often negative. Overall English proficiency showed small positive links with naturalness ($p = 0.123$), encouraging ($p = 0.199$), and understanding ($p = 0.145$), but negative correlations with caring ($p = -0.253$) and supportive ($p = -0.217$). Listening comprehension abilities were predominantly negative, especially for supportive ($p = -0.432$) and understanding ($p = -0.289$).

5 Discussions

This study demonstrates that the presence of discourse markers substantially enhanced L2 learners’ perceived empathy in AI-mediated therapeutic dialogues. Psychotherapist 1, who employed discourse markers, was rated significantly higher in caring, naturalness, understanding, and perspective shifting. These findings align with politeness theory [14], which posits that positive face strategies, such as discourse markers, mitigate face-threatening acts and foster interpersonal harmony. By softening conversational transitions and signaling attentiveness, discourse markers operate not only as structural elements of discourse but also as pragmatic devices that convey empathy and relational sensitivity [15].

The correlation analysis highlights the role of participants’ language abilities. For Psychotherapist 1, overall English proficiency was consistently and positively associated with empathy perceptions across all six dimensions, particularly perspective shifting and naturalness, whereas listening comprehension ability exhibited weaker effects. This indicates that overall English proficiency was more essential than listening comprehension abilities in interpreting discourse markers as politeness strategies, thereby learners perceived greater empathy. In contrast, correlations between listening comprehension abilities and Psychotherapist 2 were mostly negative, while correlations between overall English proficiency and Psychotherapist 2 were weakly negative, suggesting that learners’ listening comprehension abilities were more essential in sensing the lack of politeness strategies than learners’ overall English proficiency.

These findings underscore the pragmatic value of discourse markers in AI-mediated communication. Beyond their role in structuring speech, discourse markers function as politeness devices that enhance perceived empathy. For AI-mediated psychotherapy, the results suggest that incorporating discourse markers can be a low-cost yet effective means of fostering trust [15], particularly among clients with higher language proficiency who are more attuned to pragmatic nuance.

6 Conclusions

This study explores the impact of discourse markers on L2 English learners' perceived empathy in AI-mediated dialogues, focusing on their interaction with overall English proficiency and listening comprehension abilities. The major findings demonstrate that discourse markers significantly enhanced perceived empathy in dimensions such as caring, naturalness, understanding, and perspective shifting. Also, overall English proficiency, rather than listening comprehension abilities, was more consistently associated with positive empathy evaluations, while listening comprehension abilities were more related to sensitivity to a lack of politeness. These results implied that discourse markers can function as politeness devices to foster positive relationships and enhance perceived empathy, with learners possessing stronger language skills more attuned to the nuanced interpersonal functions of discourse markers. However, the study's limited sample size and quasi-experimental design constrain the generalizability of the results. Future research should examine larger and more diverse learner populations with a randomized controlled trial.

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