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Designing a Conversational Agent for Education: A Personality-based Approach

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EXTENDED RESEARCH ABSTRACT

Conversational agents (CA) for education are the dialog systems that can interact with students intelligently. They are gaining popularity because of the potential benefits in education. Their applications can range from assisting students with academic questions to delivering educational materials. Our previous work has demonstrated that students' personalities impacted their interaction with educational CAs (Wang et al., 2023). However, there is very little research studying issues of personality-based designs.

Therefore, we designed and built a high-fidelity educational CA prototype with four personality dimensions via Juji. Juji was a highly recommended chatbot platform that we used in our previous study (Wang et al., 2023). Our personality-based design supports the interaction between the CA and diverse users with eight personality styles in four pairs, which were introduced by Hogan and Champagne (1980).

During the analysis and design phase, we extracted the keywords, attributes, distinctive behaviors, and interaction expectations from each description in Hogan and Champagne's (1980) paper to streamline the literal description of personalities into concrete design guidelines applicable to the prototype. Then we generated our design guidelines based on the extraction to specify interaction features, user expectations, and potential behaviors or actions that should be avoided. Based on the guidelines, we further developed four personality-based design logics. For example, for intuitive and sensing users, we regulated the information quantity and level of detail provided for each question when interacting with different types of personalities. For the feeling and thinking pair, our CA provides feeling users with more feelings and feedback from other users and provides thinking users with more logic, reasoning, or facts.

This work provides design guidelines for future personality-adaptive CA design. Moreover, our design is among the first to provide four personality dimensions of design logic in one integrated prototype to better serve users. It sheds light on the future personality-based CA design in the industry while most chatbots are still rapidly developing.

Keywords

Conversational agent/chatbot, AI, personality-based design, HCI.

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