Predicting Learner Engagement during Well-defined and Ill-defined Computer-Based Intercultural Interactions

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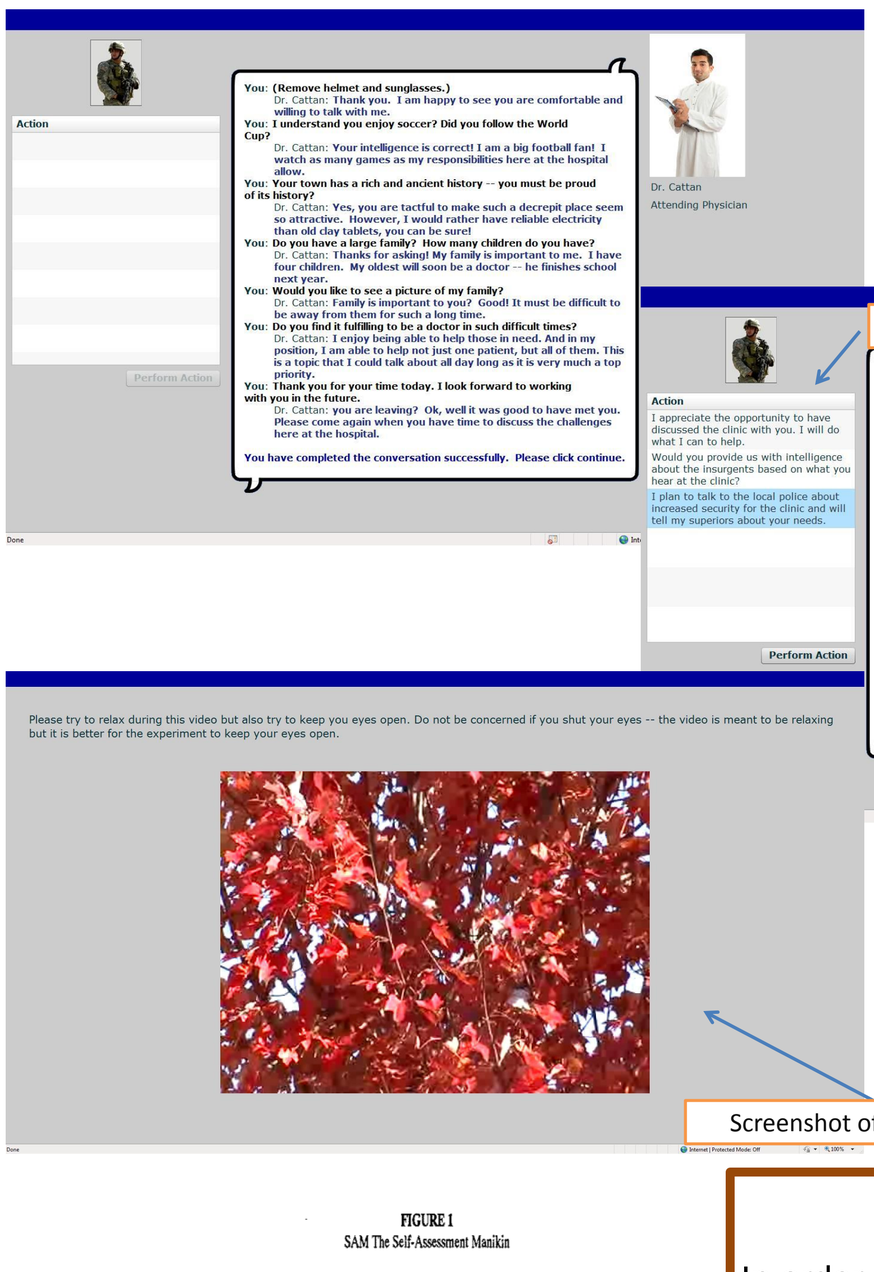
Method:

Adult learners were the target population for this study. The design focused on training bilateral negotiation techniques. Twenty-one adults participated in the experiment with seventeen providing usable data. Of the 17 participants, 11 were males (age M = 34, SD = 9.5) and 6 were females (age M = 40, SD = 12). No subjects reported experience in inter-cultural conversations or negotiations in response to the demographics questionnaire.

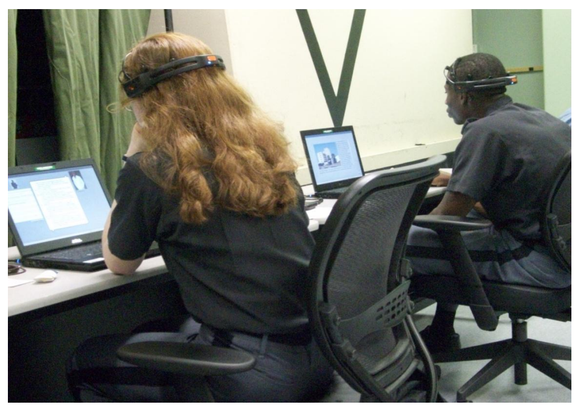
Each participant interacted with the Cultural Meeting Trainer (CMT), a web-browser-based training system prototype in which the learner engages in bilateral conversations with virtual characters representative of Middle Eastern culture. A counterbalanced within-subjects experimental design evaluated the effectiveness of an individual cognitive-state sensor during three conversations of (a) varying clarity (one well-defined and two ill-defined) and (b) the presence or absence of interruptions. A well-defined task was one which followed an unambiguous series of steps, where success was clearly defined. An ill-defined task was one in which the task was vague or ambiguous, where objectives were not clearly stated and there were many possible paths to success for the learner. Participants interacted with CMT characters through static dialogue choices.

Before each conversation, participants observed a relaxation video for one to two minutes to place them in a state of calm before conducting the next conversation. This video was intended to mediate the mood state experienced in the previous scenario. At the start of each conversation, participants were given a background briefing on the character they would be conversing with along with guidelines and the purpose of the meeting.

Cultural Meeting Trainer (CMT) Testbed

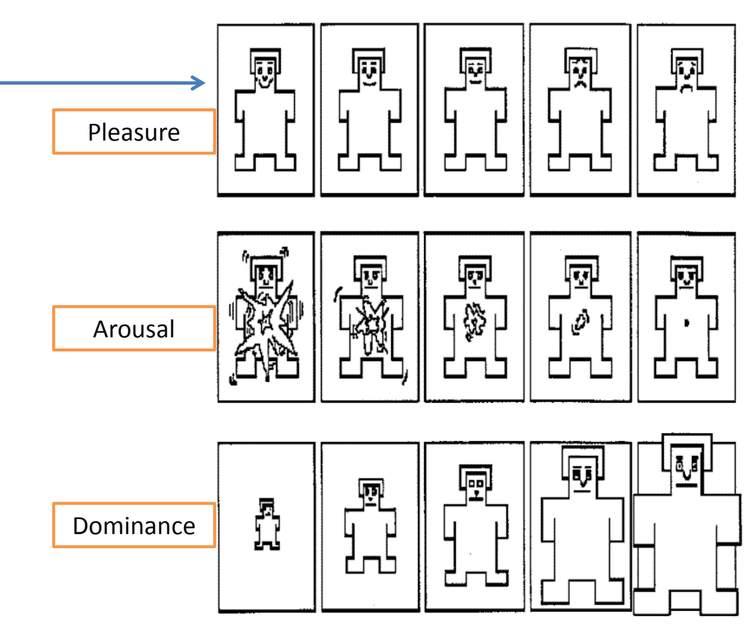


Well-Defined No Interruption (WDNI):
Required participants to maintain casual small talk with an in-house physician and to avoid any information gathering or business discussion



Ill-Defined No Interruption (IDNI):
Required participants to have conversation with the lead physician for the purpose of gathering information on the insurgent attack without making commitments directly to the doctor

Ill-Defined Interruption (IDI):
Required participants to have discussion with the hospital administrator intended for gaining U.S. support and identifying what the hospital needed to function efficiently. This conversation was designed with an interruption in task flow where the character spoke out of turn.



Hypotheses

In order to understand the influence of personality, mood and EEG measures on predicting engagement, this study anticipated the following:

H_1: Assessed measures of personality via Big Five Personality Test and mood via the SAM would correlate with self-reported measures of engagement

H_2: Aggregate physiological data (STE, LTE and Engagement from EMOTIV) would correlate with self-reported engagement levels. (e.g., *feeling of not just watching)*

H_3: Self-reported measures of engagement would be significantly higher in the interruption condition (IDI) when compared to scenarios with no interruption (WDNI and IDNI)

H_4: Self-reported measures of engagement would be significantly higher in the ill-defined scenarios (IDNI and IDI) when compared to the measures of engagement in the well-defined scenario (WDNI) due to unspecified routines for achieving task objectives

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