

## **Dyadic Rapport within and across Cultures: Multimodal Assessment in Human-Human and Human-Computer Interaction**

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Members of different cultures may behave quite differently from one another when interacting face-to-face. Differences are observable in modes of speaking as well as in nonverbal behaviors. Culture-specific aspects of speech and nonverbal behavior are signals that enable members of a culture to establish and maintain a sense of rapport with one another over intervals of interaction. Rapport, and the means by which partners in an interaction achieve it, is important to study systematically. Rapport is known to increase the likelihood of success of goal-directed interactions; also, to promote knowledge sharing and learning. With respect to verbal behavior, subtle cues signal engagement, endorsement, or appreciation. These include mirroring of word choices and of grammatical forms of utterances; also, vocal ‘backchannel’ or feedback. Similarly, many dimensions of nonverbal behavior such as posture, gaze, nods, and gesticulation, signal—both to participants in interaction and to observers of them—the extent to which the participants feel a sense of affiliation. Our multidisciplinary team of psychologists, anthropologists, linguists, and computer scientists, will examine such indices of rapport in natural interactions among members of three diverse language/cultural groups: Gulf Arabic-, Mexican Spanish-, and American English-speaking cultures. The results of these examinations of human-human interaction will then be used to program behavioral repertoires for “virtual humans”, or, Embodied Conversational Agents (ECAs). These are computer-generated, two-dimensional figures, human in appearance and capable of a range of verbal and nonverbal behaviors characteristic of listeners in interactions. We will then study human participants in interaction with ECAs. This study design permits us to manipulate, in the ECAs, aspects of behavior earlier identified as related to establishment or maintenance of rapport, so as to observe the effects on our human participants. For example, if nonverbal cues necessary for the maintenance of rapport in American English-speaking culture are infrequent or absent in an ECA that models a member of Gulf Arab culture, what effect may this have on the American participant’s evaluation of the ‘quality of interaction’ achieved with the ECA. The cross-cultural dimension of our comparative study will make it possible to identify what aspects of behavior are crucial for scaffolding successful intercultural interaction and communication among people of different cultures.