



Presentation Abstract

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Program#/Poster#: 188.05/SS32

Presentation Title: Simultaneous imaging of Neural activations of women and men in real-time conversation using fNIRS

Location: Hall A-C

Presentation time: Sunday, Nov 13, 2011, 8:00 AM - 9:00 AM

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Abstract: The hypothesis that women and men think and communicate in fundamentally different ways is a cornerstone belief that cuts across the spectrum of hypotheses regarding gender. These behavioral differences are assumed to be the product of different neural mechanisms that women and men recruit while they interact. Thus far, there have been no investigations of women's and men's brains while they are in face to face conversation. Here, we report the results of a first time investigation of same-gender and mixed-gender dyads as both members of the dyad are simultaneously imaged using fNIRS (Shalinsky, Kovelman, Berens and Petitto, 2009). The results reveal no overall differences in activation between women and men, but there were neural differences depending on the gender of their partner. **METHODS.** Fifty-four participants were assigned to same or cross gender pairings (9 Male-Male, 9 Female-Female, 9

Male-Female dyads). Each participant watched half of an out-of-sequence animated video while their partner watched the other half. Participants had to exchange information through conversation in order to place the story in the correct order, by recalling the details of their videos for their partner (Story Recall), placing the events in the correct order (Event Ordering, Inferencing), re-constructing the complete story (Story Construction) and re-telling the story to the experimenter (Story Telling). Participants simultaneously underwent functional near-infrared spectroscopy neuroimaging (fNIRS). Like fMRI, fNIRS measures hemodynamic change but is quiet, tolerates movements, and crucially, participants can be seated opposite each other and engage in genuine conversation.

RESULTS. We observed both behavioral and neural differences between women and men in the frequency with which they engaged in different strategies. However, this was dependent on the gender of their partner. Both women and men displayed greater activity in the Frontal Poles when their partner was of the same gender. Furthermore, when their partner was a woman both women and men showed increased Dorsolateral Prefrontal Cortex activity. Overall, the current research brings us beyond the stereotypes of women and men that permeate research, demonstrating that contextual variables have a major impact on the ways that women and men's brains are activated during conversation.

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