Brain-to-Brain Synchrony during Naturalistic Social Interactions

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Running Title; Brain-to-Brain Synchrony

Supplementary Table 1: Summary of trials and electrodes included in the analysis (%)

	Strangers %Mean (SD)	Couples %Mean (SD)	*t*-test
# Trials	70.12 (15.48)	73.67 (13.2)	p< 0.34
# Electrodes	73.14 (5.02)	71.92 (4.66)	*p*<0.792

Supplementary Table 2. Percentages of Dyadic behaviors in Males and Females Couples and Strangers

Groups	Behavior	Both % Mean (SE) [N]	Female % Mean (SE) [N]	Male %Mean (SE) [N]	Neutral % Mean (SE) [N]
Couples	Positive Affect	26.73 (3.97) [21]	18.5 (2.93) [21]	11.12 (2.42) [21]	41.42 (8.76) [19]
	Gaze	52.81 (2.91) [24]	20.59 (1.71) [24]	20.07 (1.61) [24]	6.51 (2.96) [6]
Strangers	Positive Affect	23.79 (3.26) [23]	16.04 (4.11) [23]	15.16 (1.98) [23]	42.68 (5.92) [20]
	Gaze	28.65 (1.59) [25]	23.08 (1.6) [25]	26.93(1.79) [25]	21.33 (6.31) [11]

Supplementary Table 3: Correlations between Gamma Synchrony and the Dyads' Subjective Experience

Subjective Assessment	Men stranger	Women stranger	Men couple	Women couple
1.Collaboration between the dyad	R=0.43 P= 0.03 *	R=0.47 P= 0.01 *	R=0.24 P= 0.26	R=-0.04 P= 0.83
2. How pleasant was the interaction	R=0.36 P= 0.07	R=0.07 P=0.74	R=0.43 P= 0.04 *	R=0.17 P= 0.41
3. Contribution of the partner to the interaction	R=0.30 P= 0.15	R=0.15 P= 0.46	R=0.58 P= 0.00 **	R=-0.12 P= 0.57
4. Contribution of yourself to the interaction	R=0.28 P= 0.17	R=0.53 P= 0.00 **	R=0.14 P= 0.51	R=0.16 P= 0.46

R – Spearman correlation

* $p<0.05$

** $p<0.01$

Power Calculations

FDR correction was applied to the resulting correlation p values of (n= 8; groups and brain lobes * frequencies bins) comparisons and tested at 0.05 level [75], and Cohen's effect size [76] was calculated over all the correlation results. The cortical sources of the couples EEG rhythms within a given frequency range[39] were estimated by low-resolution brain electromagnetic tomography (LORETA)[77–79],