**Title**

Automatic analysis of psychotherapy videos by using synchrony signal

**Introduction**

Some techniques of psychotherapy are now widely evidence-based and very cost effective, especially cognitive and behavioural therapies (Layard & Clark, 2014).

Most of the studies are indirectly based on patient reported outcomes or problematic behaviours evaluated before and after the psychotherapy. Unfortunately, studies struggle to control for what is actually happening during psychotherapy, especially the non-specific aspects, like the interaction between the patient and the therapist, that is a known predictor of psychotherapeutic efficacy. Consequently, it is difficult to make precise links between theory and practice, control its application and understand which of its ingredients are the most important.

**Objectives**

Here we suggest a research framework to extract automatically social signals from psychotherapy videos. We focused on the extraction of synchrony of the motor signal since it was considered to be a predictor of psychotherapeutic outcome in an earlier study (Ramseyer, 2011) and a relevant signal for the study of mother-child interactions.

**Methods**

We developed open source python and R scripts (Varni, Avril, Usta, & Chetouani, 2015) to compute this synchrony of motion history on a database of interaction between a parent and a child. http://bit.ly/syncpsy

**Results**

We confirmed that synchrony was a relevant signal for studying social interactions since the scores are completely different from synchrony scores computed on shuffle motion history data. However these scores alone are unable to distinguish the two periods of the videos (with and without disagreement).

**Conclusion**

Synchrony of motion history is a promising marker of social interactions.