

## **Application of validated facial avatar paradigm to study of violence exposed mothers with PTSD**

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### **Summary:**

The Todorov and Schechter labs will collaborate towards application of Todorov et al.'s facial avatar paradigm from the paper "Validation of data-driven computational models of social perception of faces" to the Geneva Early Childhood Stress Project so as to measure maternal-child electrical brain- response to emotional stimuli.

The Schechter Lab is part of the Swiss national science foundations "Synapsy" pole of research. For the second phase of this project the lab has proposed a grant application that is aimed at investigating the links between early-life stress (ELS) exposure and psychopathology over the course of human child development using a prospective longitudinal design. Prior research by the investigators and others have demonstrated that ELS is associated to disturbed maternal interactive behavior following interpersonal stress, dysregulation of maternal stress physiology and cortico-limbic functioning (Brand et al., 2010; Schechter, Moser, McCaw, & Myers, 2013; Schechter et al., 2012; Sturge-Apple, Davies, Cicchetti, & Manning, 2012). In previous studies the Schechter Lab examined how maternal posttraumatic stress disorder (PTSD) related to violence impacts the caregiving environment and the mother-child relationship during infancy and early childhood. In the second phase it will extend these studies longitudinally and identify predictors of individual differences in the emergence of ELS-related psychopathology.

In particular it investigates the link between individual differences in ANS/HPA axis responsiveness and neural circuit activation to emotional cues. The study aims to use EEG as well as structural and functional MRI to assess individual differences in brain activation patterns and structure in children previously exposed to ELS as well as their mothers. Visual evoked potentials in response to facial affect presentations will be performed in Geneva in collaboration with the group of C. Michel. In this respect the project is also very interested in paradigm of emotion perception that are connected to social judgments. Recent studies by the Todorov lab (Todorov, Dotsch, Porter, Oosterhof, & Falvello, 2013; Todorov, Mende-Siedlecki, & Dotsch, 2013), performed an interesting paradigm and at the same time validated differing scales, among them dominance, extroversion, threat, and trustworthiness. They further linked these findings to amygdala activation in an MRI study. We hypothesize that judgments on these scales are very relevant to emotion comprehension and social judgment deviations in maternal PTSD and may also be instructive as to how ELS changes emotion perception in the future.

The grant will allow two groups to be able to travel, meet and discuss the practical implementation for this project. It will also permit the Schechter lab to pilot an MRI study on this project and the Todorov group to adapt and possibly to further extend their computational models for more advanced application to a clinical research sample of mothers and children. The objectives of this project are feasible and in fact essential to further collaboration to understand how stress related pathology is linked to maladaptation on the individual level in terms of social judgments of other individuals. Furthermore it would link the Todorov study to physiological measures among healthy control subjects as well as among patients suffering from PTSD.