This work involves algorithms to assist with the early diagnosis of children who are at risk of developing behavioral disorders.

Previous research has indicated that two critical areas of behavioral investigation for use in identifying at-risk children have been abnormalities in motor activities and emotional range displays, especially of the face. Motor abnormalities are based on the observation that motor control involves the circuits of the brain associated with dopamine; these are also implicated in behavioral disorders.

Many different disorders share the observation of disruption in the emotional range regulation, so facial expressions are included in the study. To date, assessments of motor and emotional range have been done by the experts who view and rate videos of an individual. However, these expert, subjective ratings limit the analysis of behavioral conditions to only a narrow range of behaviors, work only for small populations of individual subjects, and are both costly and dependent on the observer’s particular expertise. In order to enable wider population screening, automation is required. Innovative ways of capturing and quantifying the expertise of experts are accompanied by metrics for assessing the evolution of the behavior. In addition, new computational tools support evaluation of the effectiveness of interventions.