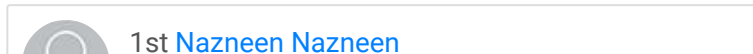


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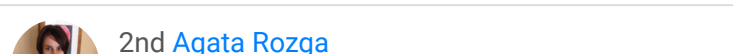
Iterative Design of a System to Support Diagnostic Assessments for Autism Using Home Videos (poster)

Conference Paper · April 2014

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Abstract

Background: Direct observation remains a gold standard practice in diagnosing ASD. While clinical professionals acknowledge that observing behavior in the natural environment is crucial to obtain an accurate and comprehensive assessment, such observation is currently not feasible to implement into clinical practice on a large scale.

Objectives: To iteratively design a system that will enable parents to record video examples of their child's behavior in the home under the guidance of a clinician, and share these recordings with the clinician for the purpose of diagnostic assessment for autism.

Methods: An initial prototype was developed based on interviews with 11 clinicians experienced in diagnosing autism and

6 parents of children with autism. The system consisted of two components. First is an application installed on a hand-held device that guides parents to record and upload four scenarios of their child that were selected on the basis of eliciting a range of behaviors relevant to diagnosing autism. The second component is a web portal for clinicians to review uploaded videos and tag behaviors relevant to diagnosing autism. If the clinician needs more video information, they can send specific recording instructions to the family. Once all videos are reviewed, the clinician completes a DSM checklist. The initial design was evaluated and improved through two usability studies. In each study, four families of children ages 3-6 years with an autism spectrum diagnosis were invited to a home-like laboratory facility for a two-hour session to record the four scenarios using our system. All families were interviewed about their experience using the system. In the second usability study, the 16 videos recorded by the four families were reviewed by a clinician to rate their utility for the purpose of diagnostic assessment.

Results: The videos recorded by parents, along with interview transcripts, were reviewed to identify specific capture challenges. In the second usability study, 33% of the parent-recorded videos were rated as appropriate for conducting an autism diagnostic assessment by the clinician, while another 47% were rated as partially useful but requiring additional exemplars. The parameters that affected the clinical utility of parent-recorded videos can be broadly categorized under staging (e.g. camera positioning and environmental setup) or social presses (e.g. frequency and type of interactions with the target child).

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conducting a study in which families of children recently diagnosed with autism will use our system in their homes, under the guidance of a remotely-located clinician. Two clinicians will independently review the videos uploaded by each family and complete a diagnostic checklist for autism, which will be compared to the child's current diagnosis.

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The initial prototype was informed by an interview study conducted with 11 clinicians and 6 parents of children with autism as well as our pilot research

[18,19,20]. The initial design of NODA SmartCapture was iteratively improved through an initial experience of families (n=8) of children with autism using it in a controlled home-like setting [20]. NODA Connect was iteratively improved through a participatory design process involving a collaborating diagnostician who had more than 20 years of experience in autism diagnosis and a researcher in the autism domain [21].

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