



Cognitive Tele-Assessment in Children: a Systematic Review

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BACKGROUND

Cognitive Tele-Assessment (CTA) refers to the use of Information and Communication Technologies for the remote assessment of cognitive functions (Krach et al., 2020). In comparison to in-person assessment (IPA), remote assessment of cognitive development can increase accessibility by families from low socio-economic conditions and it may become mandatory in some emergency circumstances. Following Covid-19 pandemic, clinical and research interest in CTA in children has notably increased (Farmer et al., 2020). Given the pressure by the need of remote assessment together with the short history of CTA, the risk of extemporary uses of CTA tools is high.

AIMS

1. to investigate the cognitive functions most frequently measured by CTA in children and the variability in terms of procedures and characteristics of the sample;
2. to investigate the agreement between CTA and IPA scores in children;
3. to define good practices for conducting CTA in children.

METHOD

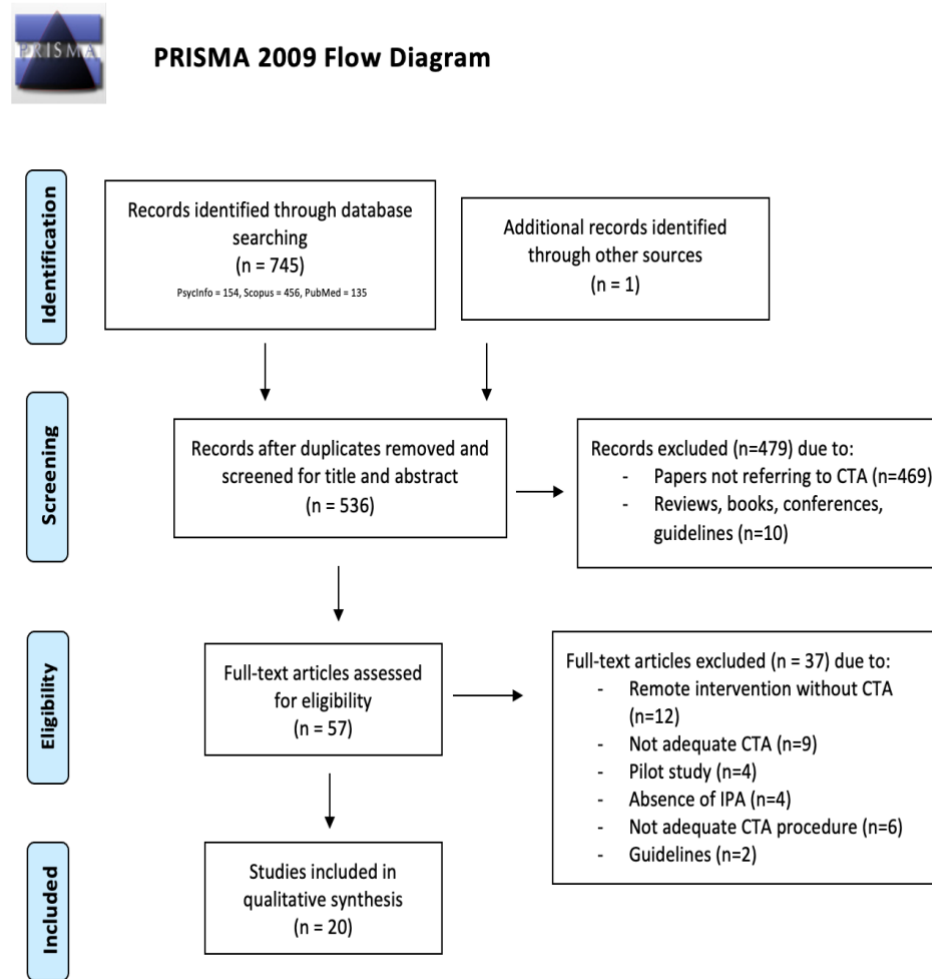
INCLUSION criteria:

1) Use of cognitive tele-assessment	2) Papers in English
3) Primary research articles	4) Children aged between 18 months and 18 years
5) Tele-assessment including at least one cognitive measure	

KEYWORDS

("pediatric*" or "child*" or "young children" or "school-aged children" or "youth") AND ("tele-assessment" or "telemedicine-based assessment" or "teleneuropsychology" or "videoconferencing" or "in-person-based assessment" or "remote assessment" or "telehealth" or "via telehealth" or "telepractice" or "telepsychology") AND ("cognitive" or "intelligence" or "intellectual ability" or "literacy" or "math" or "language" or "speech" or "memory" or "learning" or "attention" or "perception" or "visuo-spatial" or "motor" or "executive function*" or "neuropsycholog*")

PRISMA 2009 Flow Diagram



RESULTS

RQ1.

Twenty studies were analyzed for a total of 1221 children with typical and atypical development (age range: 18 months - 18 years). The following cognitive functions were investigated through CTA: language and speech, communication and social skills, academic skills, intelligence, memory, visuomotor integration, executive functions. Studies varied in the equipment and study design used. In addition to the remote operator, in all but two studies, there was an adult next to the child.

RQ2.

In all studies, a high agreement was found between CTA and IPA scores, although this varied according to the functions investigated and the tests used. Poor agreement was found mainly in some linguistic measures (eg articulation and verbal fluency).

RQ3.

Guidelines, that can be followed during CTA, were defined: in presence and remote operators' preparation, test and room's setting, child's familiarization with CTA setting, family's participation, psychometrics, ethic and legal aspects to be considered when choosing CTA.

DISCUSSION AND FUTURE DIRECTIONS

CTA was found to be a feasible and valid procedure for assessing cognitive development. However, precautions and good practices must be taken to overcome any technological problems. CTA must be considered as an integration, not a substitute, of IPA. Further studies are needed to standardize CTA procedures

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