

# **A systematic review of research involving ASD screening tools: A roadmap for modelling progress from basic research to population impact**

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## **Background & Objectives**

Concerns about ASD's prevalence and delays in diagnosis mobilized \$2.5 billion in research funding in the United States between 2008 and 2015. Yet recent reports indicate persistent and significant gaps in timely and accurate identification.

We recently reviewed all projects funded through the National Institutes of Health from 2008 to 2013 focused on ASD identification. Only 9 projects (1% of all NIH ASD research funding) focused on improving ASD identification among community providers<sup>1</sup>. Do these gaps in research funding in the United States reflect broader gaps in translating research into community practice?

Our objective was to propose a research roadmap for achieving large scale improvements in ASD identification (see Figure 1), in this case focusing on applied research on the Checklist for Autism in Toddlers and its variants (CHAT+). We sought to evaluate the roadmap's utility in capturing publication gaps and trends over time.

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Insert Figure 1 about here  
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## **Methods**

See Figure 1 for categories, stages, subtypes, and milestones of research, and other elements of an integrated network.

### Steps

1. We conducted electronic database searches for all peer-reviewed publications describing original research involving the development, validation, or implementation of the CHAT+
2. We reviewed abstracts to eliminate articles that were not relevant. We conducted full-text reviews to assign studies to subtypes based on primary objectives, and to exclude studies that did not lead to diagnostic evaluations. Additional reviews are underway to capture other study details.
3. We have begun to search the internet for the resumes of the first and last authors on all original research studies included in the Roadmap. We have begun to code resumes for evidence of clinical training, and experience delivering services or leading programs.

Other details regarding methods are available on our website. As analyses are ongoing, updates will be posted at regular intervals at <http://www.asdroadmap.org/research-roadmap-for-asd-screening.html>.

## Results and Conclusions

An initial review of almost 200 abstracts yielded 91 relevant research studies involving the CHAT and its variants. Most (74) have involved the M-CHAT. Based on the primary objective, 76 (84%) have been classified as clinical research studies (see Figure 2). Fifteen (16%) focused on implementation or other applied research, often assessing rather than seeking to overcome potential barriers. The lack of implementation research helps to explain persistent gaps in timely and accurate identification, and suggests a need to shift research priorities.

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Insert Figure 2 about here  
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Other emerging findings suggest other areas of growth and reasons for the gaps observed. For example, few studies appear to explore the tool's utility outside of medical settings. An ongoing review of the background and training of first and last authors suggests that few have extensive experience working in more typical, community-based settings.

This review demonstrates the utility of the research roadmap in charting progress. Trends over time in publications of clinical and implementation research involving the M-CHAT (Figure 1) are consistent with the roadmap, with more studies emerging in later years to focus on elements of implementation.

## References

1. Doehring, P. (2018, May). Priorities established by the Combating Autism Act for improving ASD identification: Looking beyond ideas and instruments towards implementation. Paper presented at the International Society for Autism Research, Rotterdam, NL.

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Figure 1: A Research Roadmap for Screening using the CHAT+



