

## Models and frameworks for guiding assessment for aided Augmentative and Alternative Communication (AAC): A Scoping Review

S. Burnham, P. Finak, J. Henderson, N. Gaurav, T.C. Davies, S. Pinder, B. Batorowicz  
*Queen's University, Ontario, Canada*

### Purpose

- It is theorized that systematic evidence-based assessment models can be used to assess and prescribe AT systems. (Bernd et al., 2009)
- Previously published systematic reviews use lenses other than AAC to analyze assessment models. (Bernd et al., 2009; Giesbrecht, 2013; Lenker et al., 2003; Bromley, 2001)
- The success of the match between the user and the assistive technology system is a function of the **model or protocol** used during assessment and the skill of the multidisciplinary team. (Federici and Borsci, 2016)
- An appropriate user-AAC match can allow an individual to express their feelings, communicate with loved ones, and contribute to the workforce.
- An incorrect match between the technology, the needs and abilities of the user, and the contextual factors can greatly decrease the effectiveness of the user-technology system. (Arthanat et al., 2007)

## Background

- Disability is viewed as a feature of the person as a direct result of disease, trauma, or other health conditions in the medical model. The healthcare professional seeks to “correct” the disability. (The International Classification of Functioning, Disability and Health, 2002)
- The social model however views disability as a problem created by society, not an attribute of the person. Action from policy makers is required to remove physical barriers brought on by societal attitudes. (The International Classification of Functioning, Disability and Health, 2002)
- A shift in thinking has occurred such that the ICF (2001) is based on a hybrid medical-social model termed the biopsychosocial model.
- Assistive Technology (AT) assessment includes conceptual models and frameworks that consider not only the person but the environment in which they use the assistive technology.



A high-tech aided AAC device.

Photo taken from: <https://liberator.net.au/news/when-should-we-start-using-high-tech-aac.html>.

## Objectives

1. Identify the available models and frameworks for guiding the assessment for aided AAC.
2. Summarize the similarities and differences of available models and present areas of future research in the field of AT and AAC assessment.

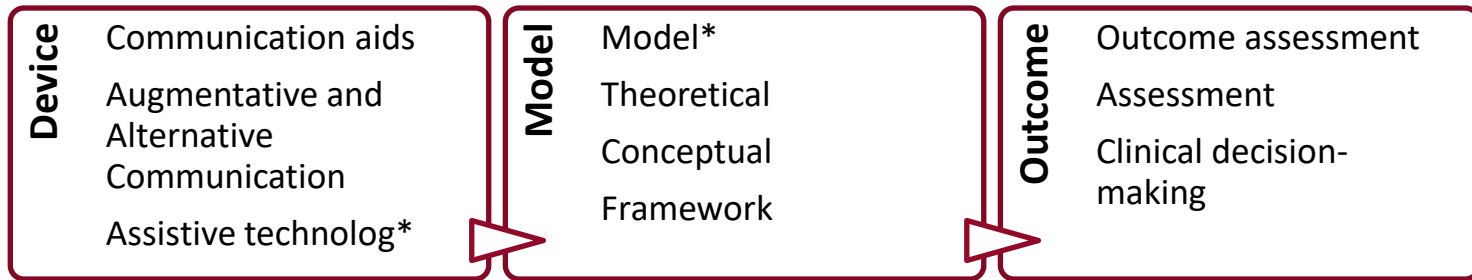
# Methods



1

**Databases:** IEEE, ERIC, JSTOR, PubMed, PsycINFO, Scopus, Medline, Engineering Village, ProQuest, Web of Science, Education Source

## Search Strategy



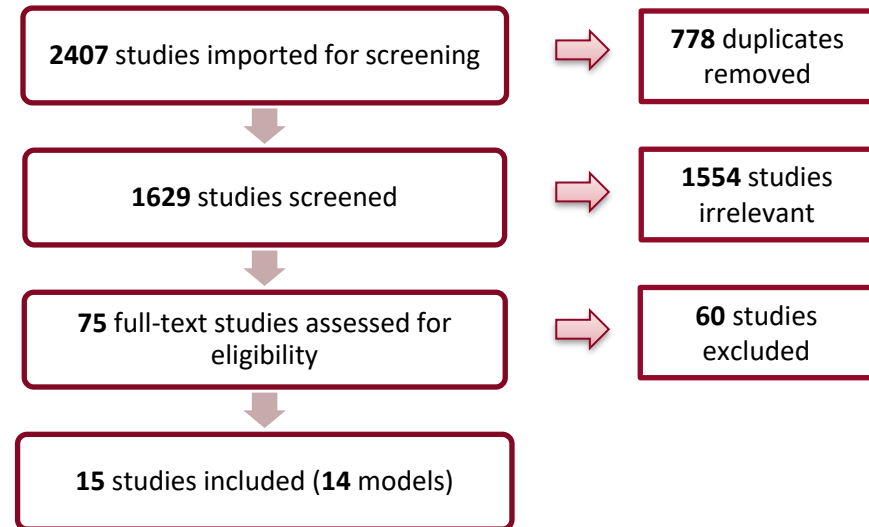
2

## Inclusion Criteria

- The study must include a defined model or framework.
- All iterations of the model will be included.
- The study must be the original publication of the model or iteration of the model.
- The model must include aided AAC or be general to all AT and can be applied to aided AAC.
- The studies may be available in grey literature (conference proceedings, patents, government reports, etc.) but not books or textbooks.
- The abstract and study must be written in English.
- All studies from 1970-present will be included.

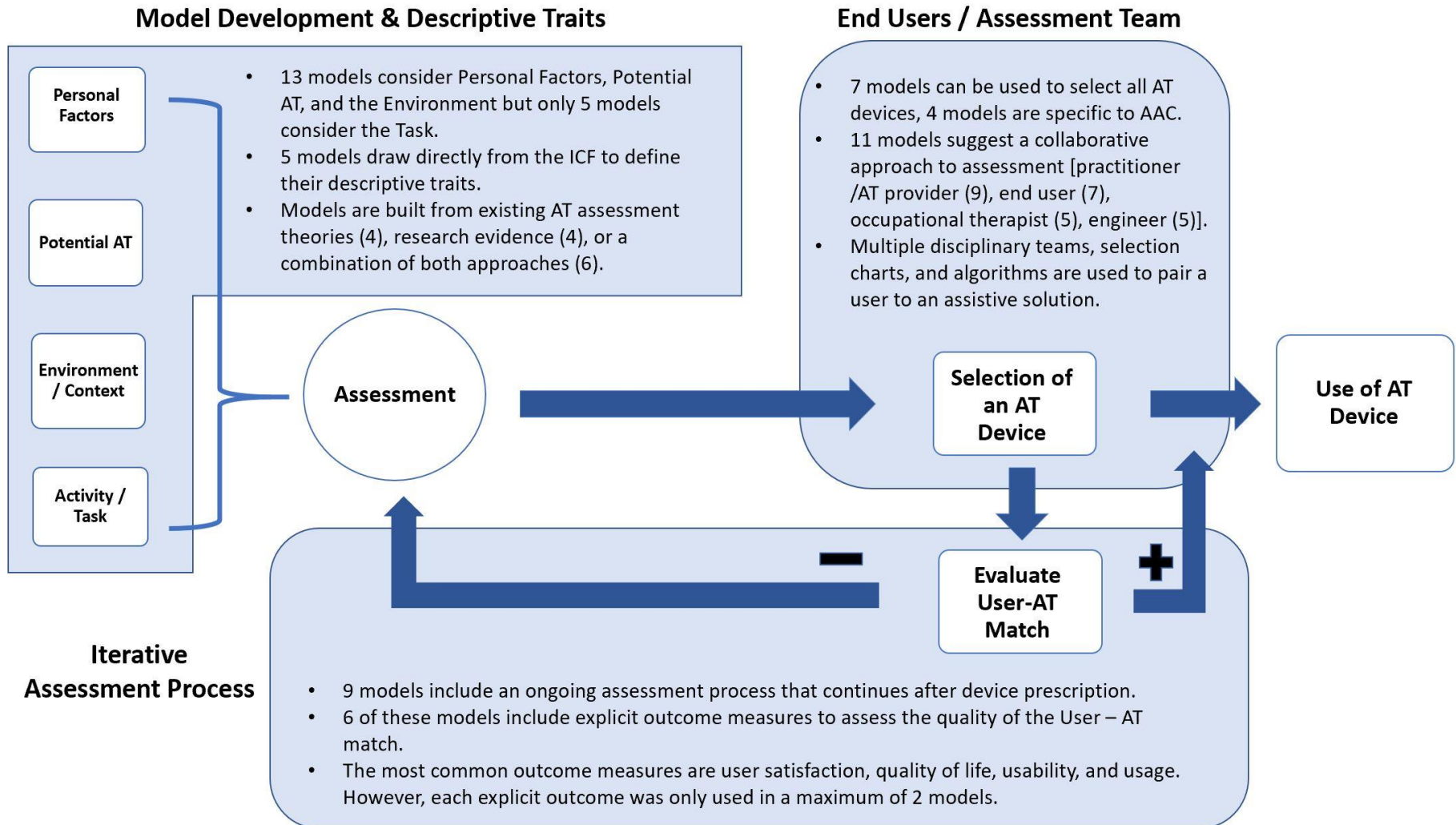
3

## PRISMA Diagram



## Results

A generic model of assessment for an assistive solution is illustrated. Descriptive traits capture information used to choose an AT device using a predetermined selection process. The feedback loop demonstrates that some models continually evaluate the validity of the User-AT match after the prescription of the device.



## Implications of Results



	Positive Implications (+)	Negative Implications (-)
Model Development & Descriptive Traits	AT assessment models have adopted a medical-social hybrid model of disability that considers both the needs and abilities of the user, and the environmental factors.	There exists no standardized definitions of descriptive traits across the assessment models. This can negatively impact ongoing assessment as the user interacts with a variety of healthcare professionals who could use different definitions.
Selection Process	A multiple disciplinary team allows for a variety of perspectives during the assessment process. The different strengths of those involved in the process can translate to a successful User-AT match.	It is unknown how compatible the assessment models that are general for all AT will be with AAC users. The narrow scope of the available models for AAC assessment (specific to children, users with Autism Spectrum Disorder (ASD), and users who require Brain Computer Interface (BCI) access methods) limits their reach in the industry.
Iterative Assessment Process	The majority of assessment models include ongoing assessment and view disability as dynamic. These models are compatible with assessment after device prescription.	Although 66% of models with ongoing assessment present explicit outcome measures, there is no consistency between them. This inhibits the comparison of the User-AT match between assessment models.

### Future Considerations

**Descriptive Traits**

- Standardize the definitions of personal and environmental factors used across AT/AAC assessment models.

**AAC Specific**

- There is a need for more assessment models that are specifically created for AAC.

**Explicit Outcome Measures**

- Explicit outcome measures to assess the success of the User-AT match should be standardized to allow for comparison between models.