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Systematic Review: Comparative Efficacy of the Picture Exchange Communication System (PECS) to Other Augmentative Communication Systems in Increasing Social Communication Skills in Children with Autism Spectrum Disorder

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Background

- Areas of social communication are globally impacted in children with Autism Spectrum Disorder (ASD).
- Social communication is the use of language in social contexts and encompasses social interaction, social cognition, pragmatics, and language processing.
- Augmentative and Alternative Communication (AAC) systems are modes of communication used to supplement or replace oral communication to help individuals express their thoughts, wants, needs and ideas.
- The Picture Exchange Communication System (PECS) is form of AAC that aims to overcome absence of communication initiations in social interactions by providing rewards and supporting children with ASD.
- Research has been conducted regarding the efficacy of AAC in increasing verbal output, but less focus has been placed on its efficacy in increasing *social communication*.
- Current research is limited on comparison of the PECS to other AAC systems and their role in facilitating the development of *social communication* in children with ASD.

Purpose

This systematic review aims to examine the effectiveness of PECS when compared to other forms of AAC in supporting children with ASD in development of their social communication skills.

Methods

Sources: PubMed, CINAHL, PsycINFO, Ovid MEDLINE, ERIC, and manual search.

Keywords: Asperger*, ASD, autis*, autism spectrum disorder*, AAC, augmentative and alternative communication, Picture Exchange Communication System, and PECS.

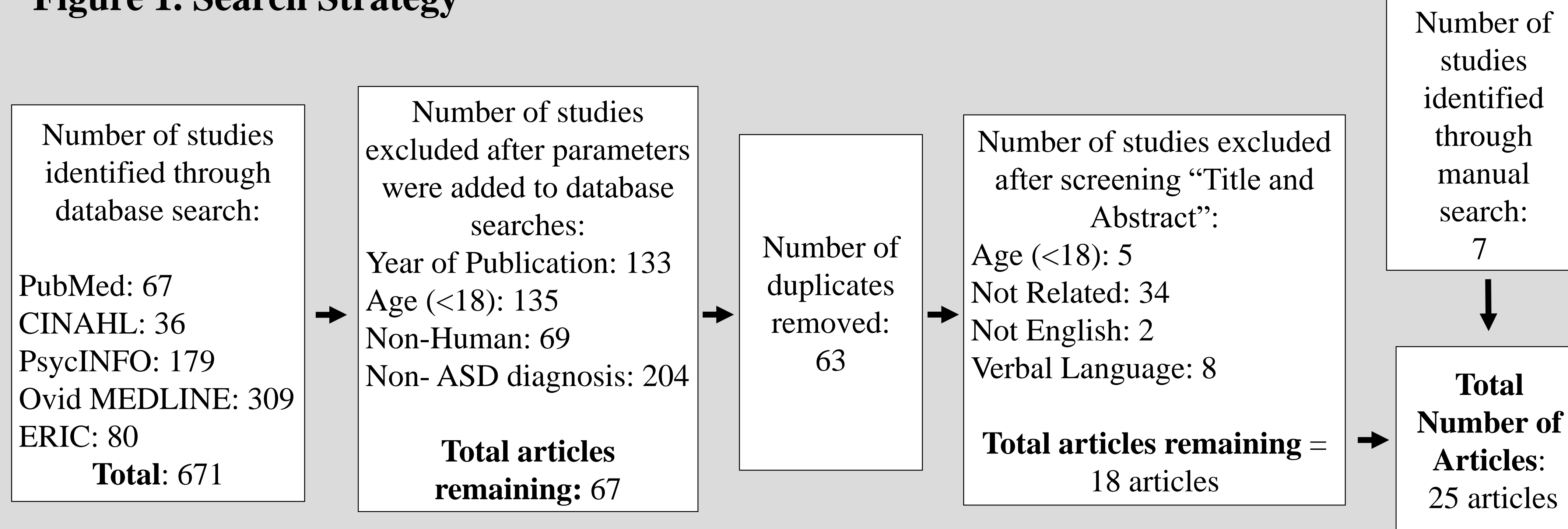
Inclusionary Criteria:

- Peer-reviewed articles published *after 2007*.
- Participants *under* the age of 18 years.
- *Majority* of individuals with a *formal* diagnosis of ASD.
- Persons *free* of severe sensory, motor, and/or other medical conditions.
- Studies discussing PECS or another AAC system on *social communication*.

Quality Assessment: Studies were critically appraised using inclusionary/exclusionary criteria followed by an analysis of the criteria of quality evidence and the levels of evidence used.

Results

Figure 1. Search Strategy



Initiation: Evidence suggests that PECS is moderately effective at increasing rates of initiation in children with ASD.

Requesting: PECS, PE, MS, and SGDs are effective modes for increasing and facilitating requesting behaviors. Neither mode stood out as more effective.

Generalizability/General Social Communication: PECS is generalizable across settings and teachers, therefore it improves social communication long-term.

Rate of Acquisition: Research showed mixed results for whether children reached a level of mastery faster for PECS or SGDs. Minimal evidence suggested PECS had a quicker rate of acquisition compared to SGDs.

System Preference: Many studies found that children have a moderate-strong preference towards a specific communication mode. There is little evidence that one mode is more preferable than another.

Table 1. Summary of Discrete Social Skills Discussed in Included Studies

Study	Initiation	Requesting	General Social Communication	Generalizability	Rate of Acquisition	System Preference
Agius, et al. (2016)		X			X	X
Alsayedhassan, et al. (2016)	X	X				
Boesch, et al. (2013)			X		X	
Carr & Felce (2007)	X					
Couper, et al. (2014)		X			X	X
Flippin, et al. (2010)	X	X	X			
Ganz, et al. (2008)		X				
Ganz, et al. (2009)		X				
Ganz, et al., (2012)	X					
Ganz, et al. (2014)			X			
Greenberg, Tomaino & Charlop (2012)			X	X		
Hill & Flores (2014)	X	X			X	X
Howlin, et al. (2007)	X					
King, et al. (2014)		X				
Lerna, et al. (2012)			X			
Lerna, et al. (2014)	X		X			X
Lorah, et al. (2013)		X	X		X	X
Mcduffie, et al. (2010)	X		X			
Meer, et al. (2013)		X			X	X
Pasco & Tohill (2011)			X	X		
Sigfoos, et al. (2009)		X	X		X	X
Still, et al. (2014)		X				X
Tanner, et al. (2015)			X			
Theimann-Bourque, et al. (2016)	X		X			X
Yoder & Leiberan (2010)	X		X			

X: Represents discussion of the social communication skill(s) and/or AAC system aspect(s) but does **not** indicate specific results.

Limitations

- Only included articles written in English available through the UVM research network.
- 3 studies had participants diagnosed with a developmental delay or comorbid diagnoses.
- Inclusion of single case design studies.
- Minimal discussion of fidelity of intervention.
- Inconsistent inclusion of all Phases of PECS with many studies stopping intervention at Phase IV.

Recommendations

- Additional research focusing on direct comparison of the efficacy of PECS and AAC.
- Studies with larger sample sizes to increase generalizability of results.
- Research regarding pre-treatment factors that may affect level of success.

Selected References

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