

# Correlation Between Emergent Literacy Skills and Conventional Reading Abilities for Young Children with Autism Spectrum Disorder: A Meta-Analysis

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## Background

- Children with autism spectrum disorder (ASD) often have difficulty with the conventional reading skills of word recognition and reading comprehension (Davidson et al., 2018), which may stem from deficits in emergent literacy (Westerveld et al., 2017)
    - Code-based:** emergent literacy skills related to the ability to read printed text (e.g., alphabet knowledge, phonological awareness)
    - Meaning-based:** emergent literacy skills related to the ability to understand and use language to convey meaning (e.g., receptive and expressive language)
  - However, unlike within typical development, there has been no systematic or comprehensive examination of the relation between emergent literacy skills and conventional reading outcomes for young children with ASD
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- RQ1:** What is the correlation between emergent literacy skills and conventional reading abilities among children with ASD?
  - RQ2:** Does the correlation between emergent literacy and reading ability differ for different types of reading outcomes (i.e., word recognition vs. reading comprehension)?
  - RQ3:** Does the correlation between emergent literacy and reading ability differ for different types of emergent literacy (i.e., code-based vs. meaning-based)?
  - RQ4:** Does IQ and/or ASD symptomatology influence the correlation between emergent literacy skills and conventional reading abilities among children with ASD?

## Method

- PRISMA reporting guidelines used
- Four electronic databases searched:** (1) Academic Search Premier, (2) APA PsycInfo, (3) Educational Resources Info Center, and (4) ProQuest Dissertations and Thesis A&I
- Four sets of search terms used:** (1) ASD, (2) emergent literacy, (3) reading, and (4) early childhood
- Inclusion criteria:** ASD diagnosis, 2-9 years of age, measure of emergent literacy and reading skills, reported correlational data, and published after 1980 (DSM)
- Studies were coded for participant demographics, construct(s) measured, reliability of measures, and correlations between emergent literacy and reading outcome(s)
- Robust variance estimation was used to compute an average weighted effect size; Possible moderator variables were explored

## Included Studies

- 13 correlational studies, assessed 780 children total, ranging from 28-109 months

	Pub Type	Sample Size	Mean Age (y;m)	Emergent Literacy Skill(s)	Reading Outcome(s)	IQ, ASD Measure	# Effect Sizes	Longitudinal
<b>Arciuli &amp; Bailey (2019)</b>	JA	23	7;4	CB, MB	RC, WR	NR, NR	6	No
<b>Davidson et al. (2014)</b>	JA	94	5;6	CB, MB	RC	Yes, Yes	6	Yes
<b>Dynia et al. (2017)</b>	JA	35	4;3	CB	WR	Yes, NR	3	No
<b>Gabig (2010)</b>	DT	14	6;5	CB	RC, WR	Yes, Yes	4	No
<b>Henbest (2021)</b>	DT	22	9;1	CB	RC, WR	Yes, NR	4	No
<b>Hudson et al. (2017)</b>	JA	131	4;6	CB, MB	WR	NR, NR	15	No
<b>Jacobs &amp; Richdale (2013)</b>	JA	26	7;8	CB, MB	RC, WR	Yes, NR	8	No
<b>Kittel (2013)</b>	DT	63	7;8	CB, MB	WR	Yes, Yes	4	Yes
<b>Knight (2017)</b>	DT	120	5;1	MB	RC, WR	NR, NR	27	Yes
<b>Knight et al. (2019)</b>	JA	167	5;7	CB	RC, WR	Yes, Yes	10	No
<b>Macdonald et. al (2020)</b>	DT	15	4;6	CB, MB	WR	Yes, Yes	12	No
<b>Nash &amp; Arciuli (2016)</b>	JA	29	8;1	CB, MB	WR	Yes, NR	4	No
<b>Westerveld et al. (2018)</b>	JA	41	3;4	CB, MB	RC, WR	Yes, Yes	8	Yes

Note. JA = journal article; DT = dissertation; CB = code-based; MB = meaning based; RC = reading comprehension; WR = word recognition, NR = not reported

## Results

		ES	p
<b>RQ1: Full analysis</b>	IV: Emergent literacy DV: Reading measure	0.56	<0.001
<b>RQ2: Moderator analysis</b> (0 = WR, 1 = RC)	Intercept	0.52	<0.001
	Reading Type	0.11	0.38
<b>RQ3: Moderator analysis</b> (0 = CB, 1 = MB)	Intercept	0.58	<0.001
	Emergent Literacy Type	-0.07	0.29

Note. WR = word recognition; RC = reading comprehension; CB = code-based; MB = meaning-based; ES = effect size

## Discussion

### Key Take-Aways

- The link between emergent literacy and conventional reading abilities for children with ASD is relatively strong
- Emergent literacy skills did not relate to word recognition or reading comprehension outcomes differently, and the relation between emergent literacy and conventional reading ability did not vary by type of emergent literacy skill
- Correlations between emergent literacy and reading outcome(s) varied by participant IQ; below-average IQ correlations were stronger

### Application for Early Childhood

- Practitioners should assess and train all emergent literacy skills to promote the development of conventional reading abilities for children with ASD

### Limitations & Future Directions

- Small number of studies that met inclusion criteria
- Correlational design limits conclusions of causality
- Need more correlation and intervention research to better understand if/how emergent literacy skills are causally linked to conventional reading outcomes