

Supplementary Table 1. Database Search Strategy

Database	Search terms and limits
SCOPUS	TITLE-ABS-KEY (autis* OR asd OR pdd-nos OR "pervasive developmental disorder*" OR "pervasive child development disorder*" OR "pervasive childhood developmental disorder*") AND TITLE-ABS-KEY (parent* OR caregiver* OR mother* OR father*) AND TITLE-ABS-KEY ("naturalistic developmental behav*" OR ndbi OR "Early start Denver model" OR esdm OR "joint attention symbolic play" OR "JASPER" OR "incidental teaching" OR "pivotal response t*" OR "enhanced milieu t*" OR "reciprocal imitation training" OR "Project ImPACT" OR "social communication emotional regulation transactional support" OR scerts OR "early achievements" OR "prelinguistic milieu t*") AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "cp")) AND (LIMIT-TO (LANGUAGE , "English")) Limit: Published after 2013 Dec 31
ERIC	(Noft((autis* OR asd OR pdd-nos OR "pervasive developmental disorder*" OR "pervasive child development disorder*" OR "pervasive childhood developmental disorder*") AND (parent* OR caregiver* OR mother* OR father*) AND ("naturalistic developmental behav*" OR ndbi OR "Early start Denver model" OR esdm OR "joint attention symbolic play" OR "JASPER" OR "incidental teaching" OR "pivotal response t*" OR "enhanced milieu t*" OR "reciprocal imitation training" OR "Project ImPACT" OR "social communication emotional regulation transactional support" OR scerts OR "early achievements" OR "prelinguistic milieu t*")) AND la.exact("English")) NOT stype.exact("Books" OR "Reports" OR "Encyclopedias & Reference Works") AND yr(2014-2023)
ProQuest Dissertations & Theses Global	Noft((autis* OR asd OR pdd-nos OR "pervasive developmental disorder*" OR "pervasive child development disorder*" OR "pervasive childhood developmental disorder*") AND (parent* OR caregiver* OR mother* OR father*) AND ("naturalistic developmental behav*" OR ndbi OR "Early start Denver model" OR esdm OR "joint attention symbolic play" OR "JASPER" OR "incidental teaching" OR "pivotal response t*" OR "enhanced milieu t*" OR "reciprocal imitation training" OR "Project

	ImPACT" OR "social communication emotional regulation transactional support" OR scerts OR "early achievements" OR "prelinguistic milieu t*")) AND yr(2014-2023)
PsycINFO	(Noft((autis* OR asd OR pdd-nos OR "pervasive developmental disorder*" OR "pervasive child development disorder*" OR "pervasive childhood developmental disorder*") AND (parent* OR caregiver* OR mother* OR father*) AND ("naturalistic developmental behav*" OR ndbi OR "Early start Denver model" OR esdm OR "joint attention symbolic play" OR "JASPER" OR "incidental teaching" OR "pivotal response t*" OR "enhanced milieu t*" OR "reciprocal imitation training" OR "Project ImPACT" OR "social communication emotional regulation transactional support" OR scerts OR "early achievements" OR "prelinguistic milieu t*")) AND yr(2014-2023)) NOT (style.exact("Books"))
Web of Science	((autis* OR asd OR pdd-nos OR "pervasive developmental disorder*" OR "pervasive child development disorder*" OR "pervasive childhood developmental disorder*") AND (parent* OR caregiver* OR mother* OR father*) AND ("naturalistic developmental behav*" OR ndbi OR "Early start Denver model" OR esdm OR "joint attention symbolic play" OR "JASPER" OR "incidental teaching" OR "pivotal response t*" OR "enhanced milieu t*" OR "reciprocal imitation training" OR "Project ImPACT" OR "social communication emotional regulation transactional support" OR scerts OR "early achievements" OR "prelinguistic milieu t*")) Limit (publication date): 2013-12-31 to 2023-04-12
PubMed	((autis*[Title/Abstract] OR asd[Title/Abstract] OR pdd-nos[Title/Abstract] OR "pervasive developmental disorder*[Title/Abstract] OR "pervasive child development disorder*[Title/Abstract] OR "pervasive childhood developmental disorder*") AND (parent* OR caregiver* OR mother* OR father*) AND ("naturalistic developmental behav*[Title/Abstract] OR ndbi[Title/Abstract] OR "Early start Denver model"[Title/Abstract] OR esdm[Title/Abstract] OR "joint attention symbolic play"[Title/Abstract] OR "JASPER"[Title/Abstract] OR "incidental teaching"[Title/Abstract] OR "pivotal response t*[Title/Abstract] OR "enhanced milieu t*[Title/Abstract] OR "reciprocal imitation training"[Title/Abstract] OR

"Project ImPACT"[Title/Abstract] OR "social communication emotional regulation transactional support"[Title/Abstract] OR scerts[Title/Abstract] OR "early achievements"[Title/Abstract] OR "prelinguistic milieu t*"[Title/Abstract])

Filters applied: publication date (10 years), article language (English).

Supplementary Table 2. *Studies excluded from literature review, with reasons.*

Exclusion Criteria	Studies
No comparison group or baseline (n=36)	Abouzeid et al., 2019 Abouzeid et al., 2020 Al-zayer, 2014 Brian et al., 2016 Clark-Whitney et al., 2022 De Korte et al., 2020 Ding, 2019 Gaines et al., 2022 Grogan et al., 2023 Guthrie, 2016 Hernandez-Ruiz, 2018 Hernandez-Ruiz, 2020 Karp, 2019 Kasari et al., 2014 Klein et al., 2021 McGarry et al., 2020 Michaud, 2019 Mitchell, 2021 Qu et al., 2022 Qu, 2022 Rieder et al., 2023 Rogers et al., 2014 Rogers et al., 2019 Sengupta et al., 2020 Sengupta et al., 2021 Shire et al., 2018 Shire, Shih, et al., 2022 Sone et al., 2023 Stahmer et al., 2017 Tran, 2018 Tripathi et al., 2022 Vernon, 2014 Wang, 2015 Weitlauf et al., 2022 Weitlauf et al., 2020 Zhang et al., 2019

Not caregiver implemented (n=27)	Aaronson, 2016 Barrett et al., 2020 Bono et al., 2016 Bozkus-Genc & Yucesoy-Ozkan, 2021 de Korte et al., 2022 D'Entremont et al., 2022 DesChamps, 2022 Duifhuis et al., 2017 Estes et al., 2021 Gengoux et al., 2019 Jouen et al., 2017 Kim et al., 2020 Koegel et al., 2014 Laister et al., 2021a Laister et al., 2021b Noble, 2015 Roberts et al., 2023 Schreibman & Stahmer, 2014 Sinai-Gavrilov et al., 2022 Smith et al., 2019 Sterrett et al., 2022 Swain et al., 2020 Toolan, 2020 Ventola et al., 2014 Vernon et al., 2019 White et al., 2021 Yu & Zhu, 2018
No quantitative parent or child measures (n=10)	Araya, 2018 Cidav et al., 2023 Davlantis, 2015 Drapalik et al., 2022 Frost et al., 2021 Makovsky, 2016 Pickard et al., 2023 Rieth et al., 2022; Rieth et al., 2018 Shire, Arbuckle, et al., 2022
Majority of participants not autistic (n= 6)	Hatcher & Page, 2020 Kazemi & Mohebbinejad, 2020 Ousley et al., 2022 Quinn et al., 2021 Roberts et al., 2014 Yoder et al., 2021
No support programme delivered (n= 5)	Heath et al., 2021 Lense & Camarata, 2020 Pickard, 2018 Raches et al., 2019

	Sone et al., 2021
Not an NDBI support programme (n =5)	Akhani et al., 2021 Bhana, 2021 Ferguson et al., 2023 Heitzman-Powell et al., 2014 Matthews et al., 2018
Wrong age group (n=2)	Pierucci et al., 2023 Verschuur et al., 2019
Full text not available in English (n=2)	Allegra et al., 2019 Demirtas & Aykut, 2021
Full text not available (n=1)	Vejonska, 2022
Did not deliver NDBI in isolation (n=4)	Lin & Koegel, 2018 Hernandez Ruiz, 2018 Hernandez Ruiz & Braden, 2021 Oliver, 2018
Thesis excluded because data is published in peer-reviewed journal article (n=1)	Popovic, 2017

Supplementary Table 3. *Coach and coaching characteristics of included studies.*

Study	Coach		Coaching method	
	Coach characteristics	Coach qualifications	Training approach: mostly clinician-directed protocol ¹	Collaborative coaching approach: mostly relationship-directed processes used ^{1, 2}
Hong et al., (2018)	NR	NR	X	-
Ma (2022)	Doctoral candidate	BCBA 6-years autism experience	X	-
Shire et al. (2021)	Health authority employees University students Caucasian Females	Trained to fidelity in JASPER implementation and coaching	-	X
Gevarter et al. (2022)	Developmental specialists English / Spanish speaking	Bachelor's degrees 0-5 years' autism experience	X	-
Ousely et al. (2022)	NR	NR	-	X
Cain (2017)	NR		X	-
Rooks-Ellis et al. (2020)	NR	Certified in P-ESDM 20 years' early intervention experience	-	X
van Noorden et al. (2022)	Doctoral candidate Female	Certified ESDM therapist Trained in P-ESDM 5-years' autism experience	-	X
Waddington et al. (2020)	Doctoral candidate Female	Educational psychologist	X	-

		Certified ESDM therapist		
Abda (2021)	Doctoral candidate Male Father of 2 children	5-years' autism experience	X	-
Bradshaw et al. (2017)	NR	NR	X	-
Buckley et al. (2014)	Master's students	NR	X	-
Popovic et al., (2020)	NR	NR	X	-
Keough (2016)	NR	NR	X	-
Penney & Schwartz (2019)	NR	Completed 2-day training in RIT with programme developer	X	-
Taylor (2014)	Doctoral candidate Female	NR	X	-
Zaghlawan & Ostrosky (2016)	Doctoral candidate Male	NR	X	-

¹ Drawn from Kemp and Turnbull (2014), ² Drawn from Tomeny et al. (2019)

Note:

“Training” strategies included: providing written materials, clinician explaining or teaching strategies, question and answer sessions, clinician modelling strategies with the child, showing video models of other adults using strategies, parent practice with clinician feedback, clinicians choosing child goals without parent input, ‘clinical judgment’ informing decisions.

“Coaching” strategies included: collaborative planning, building on caregivers’ competence, guided practice, collaborative reflection, collaborative decision making.

“X” = reported using mostly these strategies, “-” = did not report using many/any of these strategies

Supplementary Table 4. Cook et al. (2015) quality indicators met (YES) and not met (NO) for each study.

Study	Context/ Setting	Participants		Intervention Agent		Description of Practice		Implementation Fidelity			Internal Validity					
	1.1	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	5.3	6.1	6.2	6.3	6.5	6.6	6.7
Hong et al., (2018)	NO	NO	YES	NO	NO	NO	YES	NO	YES	NO	YES	YES	YES	YES	YES	NO
Ma (2022) ¹	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Shire et al. (2021)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Gevarter et al. (2022)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Ousely (2022) ¹	YES	NO	YES	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cain (2017) ²	YES	YES	YES	NO	NO	NO	YES	NO	YES	NO	YES	YES	YES	YES	YES	YES
Rooks-Ellis et al. (2020)	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
van Noorden et al. (2022)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Waddington et al. (2020)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Abda (2021) ¹	YES	NO	YES	YES	NO	YES	NO	NO	YES	NO	YES	YES	YES	YES	YES	YES
Bradshaw et al. (2017)	YES	NO	YES	NO	NO	YES	YES	YES	YES	NO	YES	YES	YES	YES	NO	YES
Buckley et al. (2014)	YES	NO	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO
Popovic et al., (2020)	YES	YES	YES	NO	NO	YES	YES	NO	YES	NO	YES	YES	YES	YES	YES	YES
Keough (2016) ²	YES	YES	YES	NO	NO	NO	YES	NO	YES	NO	YES	NO	NO	YES	YES	YES
Penney & Schwartz (2019)	YES	YES	YES	YES	YES	YES	YES	NO	YES	NO	YES	YES	NO	YES	NO	NO
Taylor (2014) ¹	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Zaghlawan & Ostrosky (2016)	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES
Total studies meeting this indicator (out of 17)	16	10	15	11	8	11	15	10	16	8	16	15	14	16	14	14

Note: ¹ indicates that this study was drawn from a doctoral thesis, ² was drawn from a master's thesis.

Supplementary Table 4 cont. Cook et al. (2015) quality indicators met (YES) and not met (NO) for each study, and overall methodological rigor.

Studies	Outcome Measures/ Dependent Variables				Data Analysis	Total indicators met (out of 22)
	7.1	7.2	7.3	7.4	7.5	8.2

Hong et al., (2018)	YES	YES	YES	NO	YES	YES	12
Ma (2022) ¹	YES	YES	YES	YES	YES	YES	21
Shire et al. (2021)	YES	YES	YES	YES	YES	YES	22
Gevarter et al. (2022)	YES	YES	YES	YES	YES	YES	22
Ousely (2022) ¹	YES	YES	YES	YES	YES	NO	17
Cain (2017) ²	YES	YES	YES	YES	YES	YES	17
Rooks-Ellis et al. (2020)	YES	YES	YES	YES	YES	YES	21
van Noorden et al. (2022)	YES	YES	YES	YES	NO	YES	21
Waddington et al. (2020)	YES	YES	YES	YES	YES	YES	22
Abda (2021) ¹	YES	YES	YES	YES	YES	YES	17
Bradshaw et al. (2017)	YES	YES	YES	YES	YES	YES	17
Buckley et al. (2014)	YES	NO	NO	NO	NO	NO	5
Popovic et al., (2020)	YES	YES	YES	NO	YES	NO	16
Keough (2016) ²	YES	NO	YES	YES	NO	YES	13
Penney & Schwartz (2019)	YES	YES	YES	YES	YES	YES	17
Taylor (2014) ¹	YES	YES	YES	YES	NO	YES	19
Zaghlawan & Ostrosky (2016)	YES	YES	YES	YES	NO	YES	18
Total studies meeting this indicator (out of 17)	17	15	16	14	12	14	

Note: ¹ indicates that this study was drawn from a doctoral thesis, ² was drawn from a master's thesis.

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