

Functional impacts of neurodevelopmental disorders in primary school settings: a scoping review protocol

Authors

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Introduction

Neurodevelopmental disorders (NDDs) are conditions which, according to the DSM-5-TR (American Psychiatric Association, 2022), arise during the developmental period and may manifest through highly specific limitations in learning or executive functioning, as well as through more global impairments affecting social abilities or intellectual capacities. These disorders, namely intellectual developmental disorder, communication disorders, autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), specific learning disorder, developmental coordination disorder, stereotypic movement disorder, and tic disorders (including both motor and vocal tics), frequently co-occur with one another and may also be associated with behavioural or mental health difficulties. Moreover, they affect personal, social, academic, and occupational functioning. The International Classification of Functioning, Disability and Health (ICF) (World Health Organization, 2001) further highlights that these disorders, through their interaction with environmental factors, can influence social participation in everyday activities, thereby also affecting overall functioning.

Within this perspective, children spend most of their time in educational settings. To gain a deeper understanding of the inclusion of students with neurodevelopmental disorders in mainstream primary education, the concept of functional impact offers a valuable analytical lens. Grounded in the ICF framework, it connects difficulties observed in specific domains with their broader consequences for social and school participation (Ross-Lévesque et al., 2024; Maillart et al., 2024; Gentelet & Lafay, 2024). While various tools have been developed to assess functional impacts in areas such as language or mathematics, these instruments remain largely domain specific. Such fragmentation limits the comparability of findings across learning domains and obscures students' transversal functional needs.

Although the concept of functional impact holds significant potential for identifying barriers and resources within education, its use remains inconsistent. Definitions are often tied to specific diagnostic categories, resulting in conceptual heterogeneity and a lack of shared measurement tools. This ambiguity limits the capacity to compare findings across studies and to inform evidence-based inclusive educational practices.

Given the conceptual heterogeneity and the exploratory nature of the topic, a scoping review is the most appropriate methodology to comprehensively map the current state of knowledge regarding the concept of functional impact.

This scoping review therefore aims to explore how functional impact is defined and investigated in children with neurodevelopmental disorders attending mainstream primary schools.

To our knowledge, one scoping review closely related to our topic has been published, namely the study by Périchon et al. (2025). This review examined the concepts of functional impact and functional impairment in school-aged children with developmental language disorder and specific learning disorders. While this work provides valuable insights into the conceptualisation of functional impact across multiple domains of daily life, its scope was limited to these two diagnostic categories.

Building on this contribution, further work may help to broaden the scope of investigation by adopting a transdiagnostic perspective and by focusing more specifically on functional impacts within educational settings. In addition, future reviews may contribute to strengthening methodological transparency and reproducibility, for instance through explicit reporting of screening and data charting procedures, as well as clearer descriptions of qualitative synthesis processes.

The present scoping review is intended to complement this work by focusing on children with neurodevelopmental disorders (excluding intellectual disability) in mainstream primary school settings. It will implement a comprehensive search strategy integrating both controlled vocabulary and free-text terms across multiple databases, while explicitly operationalising the PCC framework (population, concept, and context). In addition, it will examine how the concept of functional impact is operationalised in the literature, including the measurement tools used and the functional dimensions captured by these instruments.

Protocol registered on OSF on March 23, 2026 and reported according to the PRISMA-P 2015 checklist (Moher et al., 2015).

Review question

Main Research Question:

How is the concept of “functional impact” studied in children with neurodevelopmental disorders attending mainstream primary schools?

- What terminology is used to conceptualise the notion of functional impact, and which definitions or theoretical frameworks are used to describe this concept?
- What types of functional impacts have been explored or assessed in relation to school life (e.g., learning outcomes, social interactions), and for which neurodevelopmental disorders?
- How is functional impact measured in studies involving children with neurodevelopmental disorders (NDDs) attending mainstream primary schools?

Methods

This review will be conducted in accordance with the JBI methodology for scoping reviews (Peters et al., 2020) and reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018).

Inclusion criteria

Participants

The scoping review will consider studies involving primary school-age children with a neurodevelopmental disorder, as defined in the DSM-5-TR (2022). These disorders emerge during the developmental period and are characterised by deficits or atypicalities in brain development processes, leading to alterations in personal, social, academic, or later professional functioning. Eligible disorders include communication disorders, autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), specific learning disorder, developmental coordination disorder, stereotypic movement disorder, and tic disorders.

Studies focusing specifically on children with intellectual disability will be excluded. Intellectual disability is characterised by global impairments in both intellectual functioning and adaptive behaviour, leading to pervasive limitations across all areas of daily life (APA, 2022). Unlike other neurodevelopmental disorders that tend to affect specific domains of functioning, intellectual disability entails a generalised impact on overall autonomy and participation. Including such studies would therefore introduce significant conceptual heterogeneity, as well as contextual discrepancies, given that children with intellectual disability are often educated in specialised rather than mainstream settings. This exclusion helps ensure the conceptual and contextual coherence of the review.

Concept

The scoping review will consider studies that have explored or assessed functional impacts in children with neurodevelopmental disorders attending mainstream primary schools.

Context

The scoping review will consider studies conducted with children attending mainstream primary schools from any country. Studies focusing on special schools or on activities outside the school context will be excluded.

Types of sources

The scoping review will consider all empirical study designs for inclusion, including qualitative, quantitative, and mixed-methods research. Eligible sources encompass both published literature (i.e., peer-reviewed articles) and grey literature (e.g., doctoral theses, reports, and conference papers if they contain sufficient data to address the questions posed in this scoping review). Reviews and other types of sources will be excluded. No restrictions will be applied regarding publication date or language.

Search strategy

The search strategy was developed in accordance with the JBI methodology for scoping reviews (Peters et al., 2020).

- **Step 1: Initial exploratory search**
A preliminary search was conducted in Medline (Ovid), ERIC (Ovid), PsycInfo (Ovid) and Embase (www.embase.com). This step helped identify the main keywords found in titles and abstracts, as well as relevant index terms related to the topic under study.
- **Step 2: Comprehensive search**
Based on the terms identified in Step 1, a complete search strategy was developed with the support of an expert in evidence searching and evidence synthesis and applied across Medline, ERIC, PsycInfo and Embase, and Scopus (www.scopus.com). Search strings were adapted to the specific syntax of each database. The detailed strategies for each database are provided to ensure transparency and reproducibility. A complementary search was conducted in Google Scholar using the Publish or Perish software, and the first 500 results retrieved were screened for relevance.
- **Step 3: Additional search (forthcoming)**

In addition, the reference lists of all included studies and potentially relevant reviews will be screened to identify further eligible sources.

ERIC <1965 to February 2026>

1	Neurodevelopmental Disorders/	256
2	attention deficit disorders/ or attention deficit hyperactivity disorder/	6789
3	autism spectrum disorders/	4762
4	developmental disabilities/	6622

5 communication disorders/ 1911

6 language impairments/ or aphasia/ or dyslexia/ 9409

7 speech impairments/ or articulation impairments/ or stuttering/3623

8 learning disabilities/ 20233

9 (neurodevelopment* adj3 (disorder* or disabilit* or impairment*)).ti,ab. 720

10 ("attention deficit" adj4 disorder*).ti,ab. 4721

11 (ADHD or ADDH).ti,ab. 4663

12 (autis* or asperger* or ASD).ti,ab. 22822

13 (development* adj3 (disorder* or disabilit* or impairment*)).ti,ab. 8624

14 (Communicati* adj3 (disorder* or disabilit* or impairment*)).ti,ab. 1769

15 (Language adj3 (disorder* or disabilit* or impairment*)).ti,ab. 5250

16 Dysgraphi*.ti,ab. 122

17 dysphasi*.ti,ab. 38

18 dyslexi*.ti,ab. 3527

19 ((read* or writ*) adj3 (disorder* or disabilit*)).ti,ab. 2943

20 (Speech adj3 (disorder* or disabilit* or impairment*)).ti,ab. 1670

21 (Articulat* adj3 (disorder* or disabilit* or impairment*)).ti,ab. 188

22 Stutter*.ti,ab. 1293

23 childhood-onset fluency disorder*.ti,ab. 5

24 (learn* adj3 (disorder* or disabilit*)).ti,ab. 15621

25 Dyscalculi*.ti,ab. 199

26 ((Math* or arithmetic*) adj3 (disorder* or disabilit*)).ti,ab. 714

27 (motor skills adj (disorder* or disabilit*)).ti,ab. 1

28 (movement* adj (disorder* or disabilit*)).ti,ab. 53

29 tic disorder*.ti,ab. 72

- 30 (developmental coordination adj (disorder* or disabilit*)).ti,ab. 227
- 31 (psychomotor adj (disorder* or disabilit*)).ti,ab. 3
- 32 dyspraxi*.ti,ab. 88
- 33 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 72908
- 34 Primary Education/ 77741
- 35 Elementary Education/ 77741
- 36 Elementary School Students/ 66060
- 37 Elementary Schools/ 13168
- 38 grade 1/ 11765
- 39 grade 2/ 9148
- 40 grade 3/ 12654
- 41 grade 4/ 16690
- 42 grade 5/ 16224
- 43 grade 6/ 14413
- 44 Intermediate Grades/ 14443
- 45 Middle Schools/ 18910
- 46 Middle School Students/ 22931
- 47 (Elementary adj2 (school* or education or student*)).ti,ab. 59052
- 48 (Intermediate adj2 (school* or education or student* or grade*)).ti,ab. 3020
- 49 (Primary adj2 (School* or education or student*)).ti,ab. 28517
- 50 (Middle adj2 (school*or education or student*)).ti,ab. 11015
- 51 ("grade 1" or "grade 2" or "grade 3" or "grade 4" or "grade 5" or "grade 6").ti,ab.10133
- 52 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 244524

53 (function* adj3 (limit* or impact* or impairment* or complexit* or outcome* or difficult* or challeng* or problem* or consequence* or deficit* or weaknes* or restrict* or effect* or repercussion* or implicat* or affect* or influenc*)).ti,ab. 8160

54 33 and 52 and 53 129

APA PsycInfo <1806 to March 2026 Week 2>

1	neurodevelopmental disorders/	4788	
2	Developmental Disabilities/	14962	
3	learning disorders/ or learning disabilities/	25797	
4	attention deficit disorder with hyperactivity/ or attention deficit disorder/	36228	
5	autism spectrum disorders/	65941	
6	Communication Disorders/	2732	
7	Language Disorders/	7964	
8	social communication disorder/	76	
9	Stuttering/	5047	
10	Specific Language Impairment/	2638	
11	Speech Disorders/	5094	
12	Speech Sound Disorder/	373	
13	Dysphasia/	381	
14	Articulation Disorders/	657	
15	Dyslexia/	8192	
16	Reading Disabilities/	6083	
17	Dyscalculia/	666	
18	Movement Disorders/	4161	
19	Stereotypic Movement Disorder/	10	
20	dyspraxia/	0	
21	Tic Disorders/	489	
22	(neurodevelopment* adj3 (disorder* or disabilit* or impairment*)).ti,ab,id.	11961	
23	("attention deficit" adj4 disorder*).ti,ab,id.	38333	

24 (ADHD or ADDH).ti,ab,id. 37878

25 (autis* or asperger* or ASD).ti,ab,id. 79182

26 (development* adj3 (disorder* or disabilit* or impairment*)).ti,ab,id. 36911

27 (Communicati* adj3 (disorder* or disabilit* or impairment*)).ti,ab,id. 6382

28 (Language adj3 (disorder* or disabilit* or impairment*)).ti,ab,id. 14449

29 Dysgraphi*.ti,ab,id. 678

30 dysphasi*.ti,ab,id. 731

31 dyslexi*.ti,ab,id. 10059

32 ((read* or writ*) adj3 (disorder* or disabilit*)).ti,ab,id. 7225

33 (Speech adj3 (disorder* or disabilit* or impairment*)).ti,ab,id. 7398

34 (Articulat* adj3 (disorder* or disabilit* or impairment*)).ti,ab,id. 603

35 Stutter*.ti,ab,id. 6379

36 childhood-onset fluency disorder*.ti,ab,id. 12

37 (learn* adj3 (disorder* or disabilit*)).ti,ab,id. 25219

38 Dyscalculi*.ti,ab,id. 811

39 ((Math* or arithmetic*) adj3 (disorder* or disabilit*)).ti,ab,id. 1199

40 (motor skills adj (disorder* or disabilit*)).ti,ab,id. 70

41 (movement* adj (disorder* or disabilit*)).ti,ab,id. 7511

42 tic disorder*.ti,ab,id. 1694

43 (developmental coordination adj (disorder* or disabilit*)).ti,ab,id. 1521

44 (psychomotor adj (disorder* or disabilit*)).ti,ab,id. 122

45 dyspraxi*.ti,ab,id. 623

46 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 235797

47 Elementary Schools/ 11143

- 48 Elementary School Students/ 48156
- 49 Elementary Education/ 4993
- 50 intermediate school students/ 124
- 51 Primary School Students/ 4747
- 52 Middle School Students/ 12485
- 53 Middle School Education/ 1133
- 54 (Elementary adj2 (school* or education or student*)).ti,ab,id. 47508
- 55 (Intermediate adj2 (school* or education or student* or grade*)).ti,ab,id. 1244
- 56 (Primary adj2 (School* or education or student*)).ti,ab,id. 23358
- 57 (Middle adj2 (school*or education or student*)).ti,ab,id.11365
- 58 ("grade 1" or "grade 2" or "grade 3" or "grade 4" or "grade 5" or "grade 6").ti,ab,id.
7689
- 59 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 121628
- 60 (function* adj3 (limit* or impact* or impairment* or complexit* or outcome* or difficult* or
challeng* or problem* or consequence* or deficit* or weaknes* or restrict* or effect* or
repercussion* or implicat* or affect* or influenc*)).ti,ab,id. 99233
- 61 46 and 59 and 60 195

Ovid MEDLINE(R) ALL <1946 to March 18, 2026>

- 1 Neurodevelopmental Disorders/ 7046
- 2 "attention deficit and disruptive behavior disorders"/ or attention deficit disorder with hyperactivity/ 41006
- 3 autism spectrum disorder/ or asperger syndrome/ or autistic disorder/ 51516
- 4 Developmental Disabilities/ 24219
- 5 Communication Disorders/ 3258
- 6 Social Communication Disorder/ 137
- 7 Language Disorders/ 6873
- 8 Agraphia/ 1069
- 9 Dyslexia/ 8980
- 10 language development disorders/ or specific language disorder/ 8028
- 11 Speech Sound Disorder/468
- 12 Speech Disorders/ 12004
- 13 Aphasia/ 11534
- 14 Articulation Disorders/ 1856
- 15 Stuttering/ 4746
- 16 Childhood-Onset Fluency Disorder/ 4
- 17 learning disabilities/ or specific learning disorder/ or dyscalculia/ 15388
- 18 Motor Skills Disorders/ 3474
- 19 Tic Disorders/ 2052
- 20 Apraxias/ 3349
- 21 (neurodevelopment* adj3 (disorder* or disabilit* or impairment*)).ti,ab,kf. 31675
- 22 ("attention deficit" adj4 disorder*).ti,ab,kf. 41358

23	(ADHD or ADDH).ti,ab,kf.	39369
24	(autis* or asperger* or ASD).ti,ab,kf.	96634
25	(development* adj3 (disorder* or disabilit* or impairment*)).ti,ab,kf.	52483
26	(Communicati* adj3 (disorder* or disabilit* or impairment*)).ti,ab,kf.	6475
27	(Language adj3 (disorder* or disabilit* or impairment*)).ti,ab,kf.	12644
28	Dysgraphi*.ti,ab,kf.	616
29	dysphasi*.ti,ab,kf.	1618
30	dyslexi*.ti,ab,kf.	7870
31	((read* or writ*) adj3 (disorder* or disabilit*)).ti,ab,kf.	3586
32	(Speech adj3 (disorder* or disabilit* or impairment*)).ti,ab,kf.	10422
33	(Articulat* adj3 (disorder* or disabilit* or impairment*)).ti,ab,kf.	718
34	Stutter*.ti,ab,kf.	5717
35	childhood-onset fluency disorder*.ti,ab,kf.	18
36	(learn* adj3 (disorder* or disabilit*)).ti,ab,kf.	14024
37	Dyscalculi*.ti,ab,kf.	669
38	((Math* or arithmetic*) adj3 (disorder* or disabilit*)).ti,ab,kf.	508
39	(motor skills adj (disorder* or disabilit*)).ti,ab,kf.	126
40	(movement* adj (disorder* or disabilit*)).ti,ab,kf.	27598
41	tic disorder*.ti,ab,kf.	2219
42	(developmental coordination adj (disorder* or disabilit*)).ti,ab,kf.	1897
43	(psychomotor adj (disorder* or disabilit*)).ti,ab,kf.	244
44	dyspraxi*.ti,ab,kf.	766
45	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44	336795
46	Child/	2068903

- 47 (elementary adj2 (school* or education or student*)).ti,ab,kf. 15199
- 48 (Intermediate adj2 (school* or education or student* or grade*)).ti,ab,kf. 3735
- 49 (Primary adj2 (School* or education or student*)).ti,ab,kf. 26581
- 50 (Middle adj2 (school*or education or student*)).ti,ab,kf.3833
- 51 ("grade 1" or "grade 2" or "grade 3" or "grade 4" or "grade 5" or "grade 6").ti,ab,kf.
118116
- 52 46 or 47 or 48 or 49 or 50 or 51 2202213
- 53 (function* adj3 (limit* or impact* or impairment* or complexit* or outcome* or difficult* or
challeng* or problem* or consequence* or deficit* or weaknes* or restrict* or effect* or
repercussion* or implicat* or affect* or influenc*)).ti,ab,kf. 500443
- 54 45 and 52 and 53 4569

Scopus March 19, 2026 : 345 results

(TITLE-ABS-KEY ((function* W/3 (limit* OR impact* OR impairment* OR complexit* OR outcome* OR difficult* OR challeng* OR problem* OR consequence* OR deficit* OR weaknes* OR restrict* OR effect* OR repercussion* OR implicat* OR affect* OR influenc*))))

AND ((TITLE-ABS-KEY ((Elementary W/2 (school* OR education OR student*)))) OR (TITLE-ABS-KEY ((Intermediate W/2 (school* OR education OR student* OR grade*)))) OR (TITLE-ABS-KEY ((Primary W/2 (School* OR education OR student*)))) OR (TITLE-ABS-KEY ((Middle W/2 (school* OR education OR student*)))) OR (TITLE-ABS-KEY (("grade 1" OR "grade 2" OR "grade 3" OR "grade 4" OR "grade 5" OR "grade 6")))))

AND ((TITLE-ABS-KEY ((neurodevelopment* W/3 (disorder* OR disabilit* OR impairment*)))) OR (TITLE-ABS-KEY (("attention deficit" W/4 disorder*))) OR (TITLE-ABS-KEY ((ADHD OR ADDH)))) OR (TITLE-ABS-KEY ((autis* OR asperger* OR ASD))) OR (TITLE-ABS-KEY ((development* W/3 (disorder* OR disabilit* OR impairment*)))) OR (TITLE-ABS-KEY ((Communicati* W/3 (disorder* OR disabilit* OR impairment*)))) OR (TITLE-ABS-KEY ((LANGUAGE W/3 (disorder* OR disabilit* OR impairment*)))) OR (TITLE-ABS-KEY (Dysgraphi*)) OR (TITLE-ABS-KEY (dysphasi*)) OR (TITLE-ABS-KEY (dyslexi*)) OR (TITLE-ABS-KEY (((read* OR writ*) W/3 (disorder* OR disabilit*)))) OR (TITLE-ABS-KEY ((Speech W/3 (disorder* OR disabilit* OR impairment*)))) OR (TITLE-ABS-KEY ((Articulat* W/3 (disorder* OR disabilit* OR impairment*)))) OR (TITLE-ABS-KEY (Stutter*)) OR (TITLE-ABS-KEY ("childhood-onset fluency disorder*")) OR (TITLE-ABS-KEY ((learn* W/3 (disorder* OR disabilit*)))) OR (TITLE-ABS-KEY (Dyscalculi*)) OR (TITLE-ABS-KEY (((Math* OR arithmetic*) W/3 (disorder* OR disabilit*)))) OR (TITLE-ABS-KEY (("motor skills" W/1 (disorder* OR disabilit*)))) OR (TITLE-ABS-KEY ((movement* W/1 (disorder* OR disabilit*)))) OR (TITLE-ABS-KEY (tic disorder*)) OR (TITLE-ABS-KEY (("developmental coordination" W/1 (disorder* OR disabilit*)))) OR (TITLE-ABS-KEY ((psychomotor W/1 (disorder* OR disabilit*)))) OR (TITLE-ABS-KEY (dyspraxi*))))

Embase

Session Results

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No.	Query Results	Results	Date
#58.	#45 AND #56 AND #57	266	19 Mar 2026
#57.	(function* NEAR/3 (limit* OR impact* OR impairment* OR complexit* OR outcome* OR difficult* OR challeng* OR problem* OR consequence* OR deficit* OR weaknes* OR restrict* OR effect* OR repercussion* OR implicat* OR affect* OR influenc*)):ti,ab,kw	706,655	19 Mar 2026
#56.	#46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53 OR #54 OR #55	322,722	19 Mar 2026
#55.	'grade 1':ti,ab,kw OR 'grade 2':ti,ab,kw OR 'grade 3':ti,ab,kw OR 'grade 4':ti,ab,kw OR 'grade 5':ti,ab,kw OR 'grade 6':ti,ab,kw	251,079	19 Mar 2026
#54.	(middle NEAR/2 (school* OR education OR student*)):ti,ab,kw	11,697	19 Mar 2026
#53.	(primary NEAR/2 (school* OR education OR student*)):ti,ab,kw	34,686	19 Mar 2026
#52.	(intermediate NEAR/2 (school* OR education OR student* OR grade*)):ti,ab,kw	5,854	19 Mar 2026
#51.	(elementary NEAR/2 (school* OR education OR student*)):ti,ab,kw	18,518	19 Mar 2026
#50.	'middle school'/de	4,181	19 Mar 2026
#49.	'middle school student'/de	2,568	19 Mar 2026
#48.	'elementary student'/de	2,498	19 Mar 2026
#47.	'primary education'/de	1,970	19 Mar 2026
#46.	'primary school'/de	20,555	19 Mar 2026
#45.	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44	530,608	19 Mar 2026
#44.	dyspraxi*:ti,ab,kw	1,275	19 Mar 2026
#43.	(psychomotor NEAR/1 (disorder* OR disabilit*)):ti,ab,kw	504	19 Mar 2026
#42.	('developmental coordination' NEAR/1 (disorder* OR disabilit*)):ti,ab,kw	2,468	19 Mar 2026

#41. 'tic disorder*':ti,ab,kw	3,231	19 Mar 2026
#40. (movement* NEAR/1 (disorder* OR disabilit*)):ti,ab,kw	49,163	19 Mar 2026
#39. ('motor skills' NEAR/1 (disorder* OR disabilit*)):ti,ab,kw	234	19 Mar 2026
#38. ((math* OR arithmetic*) NEAR/3 (disorder* OR disabilit*)):ti,ab,kw	605	19 Mar 2026
#37. dyscalculi*:ti,ab,kw	904	19 Mar 2026
#36. (learn* NEAR/3 (disorder* OR disabilit*)):ti,ab,kw	20,295	19 Mar 2026
#35. 'childhood onset fluency disorder*':ti,ab,kw	25	19 Mar 2026
#34. stutter*:ti,ab,kw	6,927	19 Mar 2026
#33. (articulat* NEAR/3 (disorder* OR disabilit* OR impairment*)):ti,ab,kw	1,029	19 Mar 2026
#32. (speech NEAR/3 (disorder* OR disabilit* OR impairment*)):ti,ab,kw	13,446	19 Mar 2026
#31. ((read* OR writ*) NEAR/3 (disorder* OR disabilit*)):ti,ab,kw	4,516	19 Mar 2026
#30. dyslexi*:ti,ab,kw	9,441	19 Mar 2026
#29. dysphasi*:ti,ab,kw	3,244	19 Mar 2026
#28. dysgraphi*:ti,ab,kw	902	19 Mar 2026
#27. (language NEAR/3 (disorder* OR disabilit* OR impairment*)):ti,ab,kw	17,165	19 Mar 2026
#26. (communicati* NEAR/3 (disorder* OR disabilit* OR impairment*)):ti,ab,kw	9,397	19 Mar 2026
#25. (development* NEAR/3 (disorder* OR disabilit* OR impairment*)):ti,ab,kw	74,760	19 Mar 2026
#24. autis*:ti,ab,kw OR asperger*:ti,ab,kw OR asd:ti,ab,kw	133,118	19 Mar 2026
#23. adhd:ti,ab,kw OR addh:ti,ab,kw	58,970	19 Mar 2026
#22. ('attention deficit' NEAR/4 disorder*):ti,ab,kw	54,547	19 Mar 2026
#21. (neurodevelopment* NEAR/3 (disorder* OR disabilit* OR impairment*)):ti,ab,kw	42,972	19 Mar 2026
#20. 'apraxia'/de	9,462	19 Mar 2026
#19. 'tic'/de	11,312	19 Mar 2026
#18. 'developmental coordination disorder'/de	2,477	19 Mar 2026
#17. 'psychomotor disorder'/de	7,836	19 Mar 2026
#16. 'dyscalculia'/de	984	19 Mar 2026
#15. 'dysgraphia'/de	1,521	19 Mar 2026
#14. 'dyslexia'/de	14,335	19 Mar 2026
#13. 'dysphasia'/de	4,621	19 Mar 2026
#12. 'fluency disorder'/de	1,393	19 Mar 2026

#11. 'stuttering'/de	6,402	19 Mar 2026
#10. 'speech sound disorder'/de	1,649	19 Mar 2026
#9. 'speech disorder'/de	36,011	19 Mar 2026
#8. 'language disability'/de	20,356	19 Mar 2026
#7. 'communication disorder'/de	12,617	19 Mar 2026
#6. 'developmental language disorder'/de	2,896	19 Mar 2026
#5. 'asperger syndrome'/de	5,769	19 Mar 2026
#4. 'autism'/de	116,084	19 Mar 2026
#3. 'attention deficit hyperactivity disorder'/de	96,899	19 Mar 2026
#2. 'learning disorder'/de	40,954	19 Mar 2026
#1. 'developmental disorder'/de	44,648	19 Mar 2026

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Study/Source of evidence selection

All citations will be uploaded to Covidence software (Veritas Health Innovation, Melbourne, Australia), and duplicates will be removed. Any remaining duplicates will be manually removed during the screening process. Screening will be performed independently by two reviewers in two stages (title/abstract/ publication types and full-text screening), using the predefined eligibility criteria.

For both screening stages, a pilot test will be carried out on a sample of 25 records to ensure a shared understanding of the eligibility criteria and to adjust the protocol. During the pilot phase, inter-rater agreement between the two reviewers will be calculated as percent agreement; if a minimum agreement level of 75% is reached, the full screening will proceed independently. If the minimum agreement is not achieved, the pilot test will be repeated on an additional 25 records until the required level of agreement is obtained.

Discrepancies between the two reviewers will be resolved through discussion, and if consensus cannot be reached, two additional reviewers (R.R. and L.R.) will be consulted to make a final decision.

The results of the search strategies, study selection, and inclusion process will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (Tricco et al., 2018).

Data extraction

Data will be extracted independently by two reviewers using a standardized data extraction tool. The tool will be pilot tested on a sample of included studies and modified as required. Any discrepancies will be discussed until consensus is reached; if needed, R.R. and L.R. will be consulted to make a final decision.

Data extraction will be conducted using the Covidence systematic review management software (Veritas Health Innovation, Melbourne, Australia). A structured data extraction form will be developed for this review and implemented within the platform. Extraction categories will include bibliographic information (author(s), year of publication, title, source type), country, study characteristics (stated objectives, methodological design), and population details (terminology used to describe the neurodevelopmental profile, diagnostic status, age range, school grade, participants involved).

Contextual variables related to the educational setting will also be extracted, including teaching modalities (e.g., regular classroom, co-teaching, integrated support) and class structure (single-grade or multi-grade).

Information directly related to the core concept of functional impact will be systematically collected. This includes:

- (a) the terminology used to refer to functional impact,
- (b) any theoretical or conceptual framework explicitly mentioned (e.g., ICF, ICF-CY, ecological models),
- (c) the definition or explanation of functional impact provided by the authors,
- (d) the functional dimensions mentioned in the theoretical background (e.g., autonomy, communication, motor skills, social participation, academic functioning), and
- (e) conceptual constructs associated with functional impact.

Details concerning the operationalisation of functional impact will also be extracted, including the outcomes targeted (“impact on what?”), the methods used for data collection (e.g., standardized tests, questionnaires, observations, interviews, document analysis), and the instruments employed (with full name, acronym, and reference). When applicable, the dimensions measured by each tool (and the number of items per subscale, if reported) will be documented. Finally, key findings related specifically to functional impact will be summarised, while findings not relevant to the objectives of this review will be excluded or noted as not pertinent.

The data extraction tool will be iteratively refined throughout the process, if necessary, to reflect the characteristics of the included studies. Any modifications will be transparently reported in the final review. If necessary, corresponding authors of included studies may be contacted during the data extraction phase to obtain missing or unclear information not reported in the publications.

Data analysis and presentation

Data analysis will be conducted based on the information extracted during the previous stage.

First, a descriptive analysis will be performed to summarise the characteristics of the included studies and their methodological features, using frequency counts and tabular presentations.

Second, the analysis will be structured to address the review questions. This will include:

- (i) the terminology used to describe functional impact, as well as the definitions and theoretical frameworks underpinning this concept;
- (ii) the types of functional impacts investigated in relation to school life, and the neurodevelopmental disorders with which they are associated;
- (iii) the ways in which functional impact is operationalised, including the methods and instruments used to assess it.

A thematic and inductive approach will be used to identify recurring patterns, conceptual dimensions, and key attributes of functional impact across studies. The analysis will also explore whether certain functional impacts are associated with specific neurodevelopmental disorders or whether some appear to be transversal across conditions.

Any discrepancies will be discussed until consensus is reached; if needed, R.R. and L.R. will be consulted to make a final decision.

Finally, conceptual mapping techniques will be used to visually represent the relationships between disorders, types of functional impacts, dimensions measured, and underlying theoretical frameworks. The results will be synthesised narratively and supported by visual representations (e.g., tables,

matrices, or concept maps) to provide a comprehensive overview of how the notion of functional impact has been conceptualised and operationalised in the literature.

Conflict of interest:

There is no conflict of interest.

Author Contributions

Sarah Dupont: Conceptualization; Methodology; Writing – Original Draft; Data Curation; Search Strategy.

Maëlle Neveu: Data Curation; Validation; Writing – Review & Editing.

Nancy Durieux: Methodology; Supervision; Writing – Review & Editing.

Romina Rinaldi: Conceptualization; Supervision; Writing – Review & Editing.

Laurence Rousselle: Conceptualization; Supervision; Writing – Review & Editing.

All authors reviewed and approved the final version of the protocol.

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