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How are intense interests used within schools to support inclusion and learning for secondary-aged autistic pupils? A scoping review

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ABSTRACT

Approximately 1.3% (42,555 pupils) of secondary school pupils in England are autistic and there are numerous reports of poor academic and social experiences among this group. The intense interests that form part of an autism diagnosis relate to an increased focus on specific topics or objects and are reported to positively impact learning when effectively embedded into teaching. However, there is very little research into how interests may be used to support learning in secondary schools and little analysis of whether the utilisation of intense interests is conceptualised and implemented as an inclusive practice. This scoping review explored how intense interests are used to support the learning of autistic adolescents and provides a conceptual analysis of the six papers identified, all from the United States. Three applications of intense interests were reported: power cards, lunch clubs and responding to joint attention. A within-child, deficit-focused perspective was consistent throughout all papers, with the aim being to improve the 'appropriate' target behaviour of autistic children. There is limited research overall, and so further research is needed to examine how intense interests can be implemented in practice in more inclusive ways.

KEYWORDS

Intense interests; autism; adolescents; inclusion; teaching and learning

Introduction

Autism spectrum disorder (ASD) is diagnosed according to social interaction and communication 'deficits' and behaviours considered to be restricted or repetitive (APA 2013; WHO, 2019). Such behaviours include

> Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests). (DSM-5, APA 2013)

However, autistic advocates and their allies in medical, psychological and educational spheres have championed a move towards a more positive, less deficit-focused characterisation and understanding of autism in general (e.g. Broderick and Ne'eman 2008;

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Milton 2014). This includes avoiding ableist languages that may stigmatise or pathologize, such as the term ASD (Bottema-Beutel et al. 2020), and hence why we use the terms 'autistic' or 'on the autism spectrum' here (Parsons and Kovshoff 2020). This movement has been accompanied by a shift towards a more strengths-based interpretation of these types of interests. For example, the 'restricted interests' of autistic people have been positively reclaimed and reframed as important aspects of personhood that are inseparable from identity and personality:

> To know a child or youth with AS [Asperger Syndrome] is to know his or her special interest area [SIA]. SIA are serious, core passions, and we cannot truly know a student with AS without knowing his or her SIA. (Winter-Messiers 2007, 150)

Consequently, Wood (2019) proposes that the 'non-pejorative terms . . . "strong interests" or "intense interests"' should be used in order to avoid pathologizing language, and so we use the term intense interests throughout (unless quoting directly from others). This positive reframing also moves 'restricted interests' away from a feature of behaviour that is considered disordered or in deficit, such that it requires amelioration or control (see Gunn and Delafield-Butt 2016; Wood 2019). Instead, interests are recommended as a means for developing a more personalised curriculum to motivate and engage learning, thereby promoting improved outcomes for autistic children (Wittemeyer et al. 2012-2015).

However, it is unclear what evidence exists relating to the incorporation of intense interests in learning for adolescents at secondary school. Educational intervention research internationally tends to focus on younger children (Parsons et al. 2009; Edwards et al. 2012; McKeithan and Sabornie 2019) such that there is a substantial research gap relating to educational approaches for autistic adolescents. Evidence from two separate systematic reviews of the literature on 'restricted interests' (Gunn and Delafield-Butt 2016; n = 20 papers) and 'circumscribed interests' (Harrop et al. 2019; n = 31 papers and theses) have concluded that there are 'overwhelmingly favorable [sic] effects' (Gunn and Delafield-Butt 2016, 423) on learning and engagement when such interests are incorporated into activities.[1] However, the age range was wide in both reviews (2–21 years and 1–24 years, respectively), thereby making it difficult to disentangle effects or issues for different age groups. Harrop et al. (2019) also considered how interests were applied in a variety of areas including school, social clubs, daily routines, and across the life spans of autistic children and adults and so it is also difficult to extract meaningful evidence relating to teaching and learning in school.

Secondary-aged pupils (adolescents) on the autism spectrum are of particular interest in this context, and the focus of the present review. Within the secondary school environment, it is well established that aspects of classroom practices including group participation, and transitions between classes and activities, can be experienced as especially challenging for some autistic children (e.g. Charman et al. 2011; Fortuna 2014). Moreover, the All Party Parliamentary Group on Autism and the National Autistic Society (APPGA & NAS, 2017) found that autistic children continue to be substantially 'let down' during their time in education, with many experiencing unhappiness, inadequate support and feeling misunderstood. More specifically, it is unclear whether and how the existing evidence on intense interests relates to secondary aged pupils despite this being recommended by the Autism Education Trust as a core principle of good practice in supporting teaching and learning for autistic children (Guldberg et al. 2019). Therefore,

the first main aim of this review was to explore existing evidence on the implementation of educational strategies relating to intense interests for supporting learning outcomes for adolescent pupils to address the research question: How are intense interests utilised to support the learning of autistic adolescents at secondary school?

The second main aim was to understand how intense interests are conceptualised within the research literature and implemented in practice for autistic adolescents. The application of intense interests for supporting learning is described as a 'strength-based approach' by Harrop et al. (2019, 82; also Winter-Messiers, 2007, 149), thereby ostensibly aligning with a more inclusive way of thinking about education (Florian 2014; Wood 2019). However, Harrop et al.'s (2019) review frames relevant research on this topic in an uncritical and medicalised way, using the term 'circumscribed interests' and discussing these as 'clinically relevant and potentially important for treatment' (64). Similarly, Gunn and Delafield-Butt (2016, 425, our emphasis) are explicit that the 'restricted interests' (RIs) at the heart of their review are '*impairments of ASD*, [that] have only recently started to be systematically examined', and that 'studies attempting to *treat RIs* are few and far between'. Consequently, there are important questions to be asked about how intense interests are implemented in research that purports to be about inclusive educational strategies. Accordingly, our second research question was how does the research literature conceptualise intense interests: as strengths-based or more deficit-focused?

Methodology

We adopted a scoping review methodology which provides a review of the literature, conducted in a systematic way, that seeks conceptual clarifications and identifies common trends and gaps within current research and can, therefore, also inform recommendations for future research (Arksey and O'Malley 2005). There are similarities with a systematic review in terms of the transparent and sequential steps taken to identify literature. However, scoping reviews tend to address broader topics (and questions) than systematic reviews, accommodate a range of research designs and do not tend to assess the quality of studies (Arksey and O'Malley 2005), since drawing conclusions about overall 'effectiveness' is not the purpose. We applied the *Preferred Reporting Items for Systematic reviews and Meta-Analysis extension for Scoping Reviews* [PRISMA-ScR] *Checklist* for the conduct and reporting of this review (Tricco et al. 2018).

Eligibility criteria

Peer-reviewed journal articles reporting primary research using qualitative, quantitative and mixed-method approaches were considered if they were written in English and dated from 2009 to 2020. Harrop et al. (2019) identified that most studies on this topic were published since 2009, hence the choice of that date as our starting point.

Inclusion and exclusion criteria

To be included, study participants had to be described as having a diagnosis of autism using the terms ASD, autism, autistic spectrum disorder, Asperger's syndrome or PDD-NOS. Studies including participants with co-occurring conditions such as attention deficit-

hyperactivity disorder [ADHD] were also considered if autism was listed as a primary diagnosis, given the highly reported intersection between conditions (Tsai 2014). The age range of participants was specified as 11–18 years. If the ages of participants were presented in a range (i.e. 8–16 years), all data were included, provided that the mean average age lay within the target age range. Research conducted in mainstream and special education settings was included.

An initial search focused on UK, but this failed to return any papers and so the search was broadened to include the United States as well (a review of evidence of autism education research showed that 85% of the articles originated from UK and USA combined so this is a reasonable strategy to take; Parsons et al. 2011).

Information sources and search strategy

Electronic searches were conducted across three major bibliographic databases (Web of Science, EBSCO Host and Scopus). The initial search strategy and subsequent updates of terminology are summarised in Table 1. Boolean Logic ('AND', 'OR') was applied to enable the combination of search terms within and between search categories.

Selection of sources of evidence

The retrieved returns were sorted by relevance via scanning of titles and abstracts. The reference lists and citations of all selected papers were then individually searched to identify relevant literature. Additionally, the reference lists of four literature reviews (Gunn and Delafield-Butt 2016; Ninci et al. 2018; Harrop et al. 2019; McKeithan and Sabornie 2019), identified from the initial search, were scrutinised. Titles were first examined alongside the eligibility criteria and research objectives before locating the abstracts and full texts for further reading. The process continued until no further articles could be identified.

Defining and operationalising 'inclusive practice'

Decades of research have been dedicated to defining what inclusion means conceptually and in practice and so readers are referred to key sources for debates and details (Thomas, Walker, and Webb 1998; Ainscow, Booth, and Dyson 2006; Mittler 2013). For simplicity, we adopted a straightforward distinction between more and less inclusive practices. Inclusive practices are strongly aligned with the social model of disability which assumes that the

Table 1. Search terminology*.

Main category search term	Diagnosis	Special interest	Education	Outcome
Individual terms that describe the main category	Autism, autistic spectrum disorder, pervasive developmental disorder, asperger	Special, restricted, intense, repetitive, circumscribed, obsession, narrow, fixation, interest, **preferred**	Education, school, **learning**, **interventions**, **strategies**, **teaching**	Motivation, engagement, **participation**

* Boolean logic used to group individual terms with 'OR' and search between main categories with 'AND'.
Additional search terms identified during literature search written in bold.

locus of responsibility for change lies in the environment of children, including the attitudes and awareness of teachers; the curriculum; and the physical, sensory and cognitive environment aspects (Porter 1995; Kapp, 2019). Consequently, it is the environment that needs to accommodate, enable and accept the child rather than the other way around and 'it is this default assumption of acceptance which is the defining characteristic of inclusion' (Thomas 1997, 103). Accordingly, we identified practices as more inclusive when the *locus for change* was placed within the environment around the child (behaviour/understanding of peers towards the autistic child, pedagogical approach, curriculum content, teacher attitudes, etc.). This conceptualisation contrasts with a medical, or within-child, model of disability which positions autism (and other difficulties or disabilities) as disorders or medical problems such that an individual is required to achieve 'normal functioning' to be included within society (Shyman 2016, 368). The emphasis is on the remediation of difficulties and deficits of the individual and so the locus of responsibility for change is placed on the child themselves. Consequently, we identified practices as less inclusive when the *locus for change* was placed within the child (behaviour, communication, social skills, understanding of the autistic child towards others).

We do not equate (or conflate) inclusion with placement at mainstream school; rather our position is that experiences of feeling included, and evidence of inclusive practices, vary widely for many pupils with SEND and are not confined to a specific type of context or type of provision (e.g. Lewis et al. 2007; Zilli, Parsons, and Koshoff 2020). However, we fully acknowledge that there are many authors who would disagree with this position, viewing placement in mainstream school as an essential, non-negotiable starting threshold for developing inclusive practices (e.g. Thomas, Walker, and Webb 1998; Nilholm and Göransson 2017).

Data charting process and data items

A form for data extraction was produced, based on the Education guidelines version 0.97 (EPPI-Centre 2003). To determine whether relevant aspects had been clearly defined, the first author and a second reviewer independently tested the form against one of the selected papers. Following data extraction, results were compared and discussed with no discrepancies or disagreements identified. The items extracted from the articles selected for review included information about the paper (e.g. full reference, place of publication), the research objective(s), number of participants, participant characteristics (e.g. age, sex, diagnosis, area of intense interest), methodology (e.g. design, method/context used to incorporate the interest, results), terminology used to describe the intense interests, and the overall orientation of the article in relation to locus for change.

Results

Selection of sources of evidence

Figure 1 summarises the article selection process. Of the 122 articles initially identified based on title and abstract, four articles remained after applying the inclusion and exclusion criteria. Hand-searching the citations and references of these four articles identified four additional papers (not including duplicates from previous searches), of

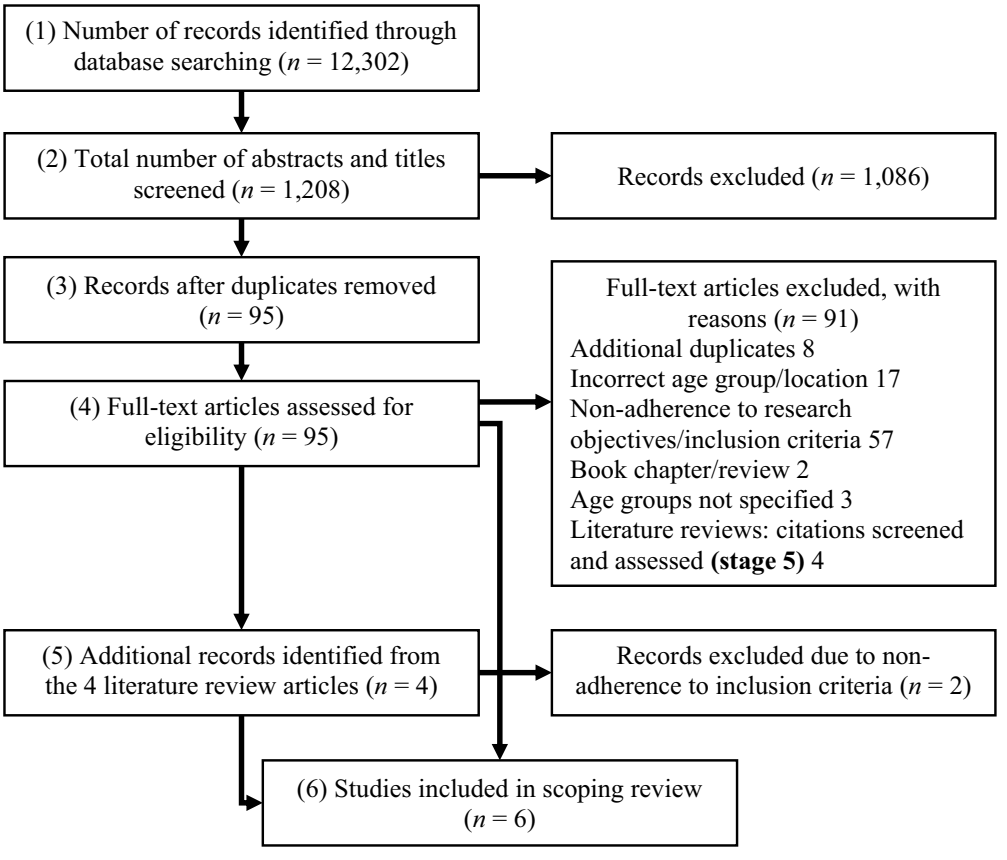

Figure 1. Source selection flow diagram.

which two were excluded due to participant age, bringing the total number of articles to six. Hand-searching the citations and references of the final six articles returned no further papers that were not duplicates of those already identified.

Source characteristics

Table 2 summarises the characteristics of the six identified studies according to authorship and date (citation); originating country; number of participants; demographics of participants (age, diagnosis and sex); type of setting and method used and target learning outcome.

Synthesis of results

All six studies were conducted in the United States and published between 2010 and 2013. Seventeen children (2 females, 15 males) aged between eleven and 17 comprised the total number of participants meeting the age parameters of this review. A detailed summary of the methodological features, outcome measures, findings, intense interest

Table 2. Overview of study characteristics.

Paper #	Citation	Country	Participants	School setting (as specified)	Method/ context	Learning outcome
1	Angell et al. (2011)	USA	N = 1*, male, 11 years, autism	Elementary school^ (general classroom setting)	Power cards	Responding to directives
2	Davis et al. (2010)	USA	N = 3, male, 16.3–17.8 years, Asperger syndrome	High school (special education resource room and conference room)	Power cards	Peer social interaction
3	Koegel et al. (2013)	USA	N = 7, 6 male/1 female, 14–16 years, ASD	High school (lunchtime classrooms, main lawn and basketball court)	Interest-related lunch clubs	Peer social interaction
4	R. L. Koegel et al. (2012)	USA	N = 3, male, 11–14 years, ASD	Junior high school, local elementary (lunchtime classrooms and courtyard)	Interest-related lunch clubs	Peer social interaction
5	L. K. Koegel et al. (2012)	USA	N = 1*, female, 12 years, autism	Public school (playground)	Interest-related lunch clubs	Peer social interaction
6	Kryzak et al. (2013)	USA	N = 2*, male, 13–14 years, ASD	School (classroom specifically set up for intervention)	Responding to joint attention	Responding to directives

* Number of participants fitting age criteria defined for this scoping review selected from larger study sample.
^ Setting not a secondary school; however, included in review due to adherence to age parameters and small overall sample.

descriptors and locus of change within each article can be viewed in Table 3 (papers are numbered from 1 to 6 and are cross-referenced in the following summary). The most common method for incorporating intense interests into educational provision was via lunch clubs (n = 3; papers 3, 4, 5) which were constructed around the interests of the autistic child to encourage social communication. This was followed by power cards (n = 2; papers 1 & 2), an intervention whereby cards were designed using a hero figure related to the child's interest to prompt target behaviour, and responding to joint attention (paper 6) which involves engaging with, and responding to another individual around an object of interest through shifting eye gaze and head orientation. Two research foci were established through these applications of intense interests: (1) supporting social engagement and initiations with peers using lunch club and power card techniques (n = 4; papers 2, 3, 4, 5) and (2) responding to adult directives using power cards and responding to joint attention approaches (n = 2; papers 1 & 6).

Data collection methods for all studies were primarily direct observations using quantitative measures, with additional video recording used by two papers for later analysis (n = 2; papers 3 & 4). Qualitative data were collected through pre-study interest identification questions and interviews with stakeholders (n = 4; papers 1, 3, 5, 6), and a post-study survey questionnaire delivered to all participants to identify perspectives of lunch club activity enjoyment (paper 3). Settings in which the interest-based methods were deployed were as follows: the playground (n = 3; papers 3, 4, 5), a classroom or other room designed specifically for the study (n = 4; papers 2, 3, 4, 6) and a regular teaching classroom (paper 1). The settings for papers 3 and 4 were activity dependent and used

Table 3. Summary of the methodological features, outcome measures, findings, intense interest descriptors and locus of change.

Paper #	Citation	Aim	Study design	Methods	Outcome measures	Findings^	Descriptor	Locus for change
1	Angell et al. (2011)	Do adapted PC assist with transitioning between class activities?	Single subject A- B-A-B-A-B withdrawal Qual pre-study interviews Quant data	SI identified in interview PC designed with hero figure related to SI and script to check transition schedule Teacher initiates transition and reads PC for child to check schedule, verbal praise given if child responds	Observations Time between transition directives given by teacher using PC and verbal cue and child checking their schedule recorded in *s* by stopwatch	Using PC reduced the length of time between transition directives and child response	Special
2	Davis et al. (2010)	Interest PC effects on conversation initiation and maintenance	Within-child Multiple-probe across-participants Quant data	Special education teacher taught children conversation skills prior to intervention SIA related PC used as prompt for pre-learned conversational skills Generalisation probe used to evaluate PC success in alternative setting	Observations Duration of others-focused conversation (i.e. asking questions, listening, eye contact) recorded in *m* and *s* using stopwatch	Conversational skills improved using PC	
3	Koegel et al. (2013)	Generalisation probe successful for two of three participants To improve conversation participation, initiations and engagement with peers	Special Interest Area Repeated measures multiple baseline across-participants Qual pre-study interview, post- study survey questionnaire Quant data	Within-child Lunch clubs designed around children's PI following interview Generalisation probe used to test whether socialisation continued in alternative activities for 5 participants Post-study feedback given to assess child enjoyment	Observations and videos % time engaged with peer (± per 1 *m* interval) Social engagement recorded by: eye contact, gestures, comments, etc. Initiation frequencies measured by tally	Lunch clubs improved initiations and	

(*Continued*)

Table 3. (Continued).

Paper #	Citation	Aim	Study design	Methods	Outcome measures	Findings^	Descriptor	Locus for change
		engagements with peers Positive overall feedback reported Generalisation not successful	Preferred Interest	Within-child				
4	R. L. Koegel et al. (2012)	Do PvI based lunch clubs promote peer social interaction?	Repeated measures multiple-baseline across-participants with 2 reversals Quant data	Social club formed around PvI and advertised at school Students partnered up before club commencement Club activities designed to encourage communication and teamwork	Observations and videos Engagement measured by ± per 1 *m* interval with overall % recorded Social initiations measured by frequency		Engagement and initiations improved with lunch clubs	
		Perseverative Interest	Within-child					
5	L. K. Koegel et al. (2012)	Do GI based lunch clubs improve socialisation?	Nonconcurrent multiple-baseline across-participants, systematic with one reversal Qual pre-study PI assessment Quant data	Social clubs designed around child's interest and advertised to recruit children Clubs activities designed to encourage interaction (i.e. sharing materials, games and team quizzes)	Observations Peer engagement measured by proximity and participation with ± per 1 *m* interval Verbal initiations measured by frequency		Engagement and initiations improved with lunch clubs	
	General	Interest Preferred Interest	Within-child					

(*Continued*)

Table 3. (Continued).

Paper #	Citation	Aim	Study design	Methods	Outcome measures	Findings^	Descriptor	Locus for change
6	Kryzak et al.	(2013)	Do CI related activities help children learn RJA?	Multiple probe across-participants Qual pre-study questions and CI preference assessment Quant data	Pre-study generalisation probe conducted to test RJA in non-CI activities RJA opportunities given to child during CI activity with praise for correct responses Post-intervention generalisation probe	Observations % of successful RJA opportunities before 4 *s* measured by target behaviour (shifting eye gaze and head from CI activity to interventionist then back) lasting >1 *s*	RJA improved during intervention	
		Generalisation successful	Circumscribed Interests	Within-child				

* *Abbreviations*: SI: Special Interest; SIA: Special Interest Area; PI: Preferred Interest; PvI: Perseverative Interest; GI: General Interest; CI: Circumscribed Interest; PC: Power Cards; RJA: Responding to Joint Attention; Qual: Qualitative; Quant: Quantitative; %: Percentage; *m*: minutes; *s*: seconds.

^ Findings report on participants described in Table 2 only.

areas of the school both inside and outside. The research designs included single-subject A-B-A-B-A-B withdrawal (paper 1), repeated measures multiple-baseline across-participants (n = 3; papers 3, 4, 5) and multiple-probe across-participants (n = 2; papers 2 & 6) (see Table 3). A non-concurrent element was incorporated (paper 5) and reversals used (n = 2; papers 4 & 5) to demonstrate internal validity. The terminology for intense interests varied between studies: Special Interests (n = 2; papers 1 & 2), Preferred Interests (n = 2; papers 3 & 5), General Interests (paper 5), Perseverative Interests (paper 4) and Circumscribed Interests (paper 6).

All studies reported on positive learning outcomes relating to the social, interactive and responsive success of incorporating intense interests into school activities. However, results varied where generalisation probes were measured. Davis et al. (2010) identified that interest-related power cards were effective when transferred to general education, language, arts and social studies classes for two of their three participants. Koegel et al. (2013) reported generalisation probes to be unsuccessful when involving activities dissimilar to interest-based lunch clubs. The generalisation probe explored by Kryzak et al. (2013) was successful and involved activities that were preferred by the child but not related to their interest.

The overall perspective of all of the articles was within-child (a non-inclusive orientation) due to the primary objectives designed to use interventions incorporating a child's intense interests as a 'behavior [sic] change mechanism' (Angell et al. 2011, 215), and to 'improve' (Davis et al. 2010, 20; R. L. Koegel et al. 2012, 138) the 'appropriate' (Koegel et al. 2013, 2133) social behaviour of the autistic pupil. Thus, the locus for change in all papers was the autistic participants due to the requirement for them to make behavioural and social adaptations towards others as a function of an intervention that incorporated their interests.

Discussion

This scoping review sought to map the literature regarding how intense interests are utilised to support the learning of autistic adolescents of secondary school age, and what these approaches reveal about the potential for using intense interests to promote inclusive classroom practices. Six articles, involving 17 secondary-aged pupils, were identified from a systematic search strategy, all based on research conducted in USA. All six articles were independently identified and included in Harrop et al.'s (2019) review also, suggesting strong reliability of our own search strategy and confirming that very little research has been published in general on this topic, and none meeting our inclusion criteria since Harrop et al.'s (2019) review was conducted. This outcome could not have been known *a priori* and so there was value in conducting the scoping search; the present analysis of inclusive practices specifically within school settings also provides a novel contribution beyond the narrow consideration of effectiveness as reported in Harrop et al.'s (2019) review. Moreover, it is important to revisit and review the evidence base in line with developing critical understandings of autism (e.g. Bottema-Beutel et al. 2020), and of classroom practices for autistic pupils (e.g. Wood 2019). Dominant models of research have traditionally been shaped by neurotypical assumptions about how autistic children should behave to 'fit in' to their environment and it is valid to raise questions about the limitations of such approaches.

Our scoping search identified three different methods for using intense interests in schools: power cards, lunch clubs and responding to joint attention. These were all focused on using a child's intense interest to increase a skill deemed to be lacking. Specifically, power cards were used to prompt the development of conversational skills with peers (Davis et al. 2010), and to assist with classroom activity transitions (Angell et al. 2011). Interest-related activities were used as social reinforcers for responding to joint attention during one-to-one instruction between an 'interventionist' and autistic child (Kryzak et al. 2013, 674). Lunch clubs were designed around children's interests and used to encourage autistic children to initiate and engage in conversations with their peers (L. K. Koegel et al. 2012; R. L. Koegel et al. 2012; Koegel et al. 2013).

In line with conclusions from others (Gunn and Delafield-Butt 2016; Harrop et al. 2019; Wood 2019), the use of intense interests improved the engagement of autistic adolescents in social activities and responding to social communication and these were considered positive features of the approaches taken. The increased engagement of children in interest-related and preferred activities could be indicative of learning being made more meaningful and relevant to them (Caldwell-Harris and Jordan 2014; Brown and Stanton-Chapman 2015). However, these interest-related approaches were not compared with alternatives thereby limiting the conclusions drawn. Additionally, the findings concentrated solely on social learning conducted mostly within highly structured, experimental research designs in often adult-led, prompt dependent ways. Studies were constructed as controlled interventions, with measures of success recorded quantitatively, based upon pre-determined outcome criteria. No peer-reviewed articles were identified that explored pedagogical approaches or the potential academic benefits of using intense interests in education more broadly for secondary-aged autistic children. This contrasts with evidence for positive benefits for younger children (e.g. Wood 2019). Thus, this scoping review has demonstrated a specific and important gap relating to the incorporation of intense interests in everyday classroom teaching and learning (especially in the UK) to support academic, rather than social or behavioural, learning outcomes for secondary-aged pupils.

Moreover, the dominant approach to incorporating interests in learning tasks was within-child and deficit-focused. This belies the supposedly inclusive stance conferred on these studies through ostensibly adopting a strength-based approach to learning. The broad aim of all six papers was to use intense interests to encourage the development of 'socially desirable' behaviour by the autistic child. That is, autistic children were expected to change their own behaviour to fit in with others rather than environmental adaptations being made to accommodate and support children's differences. For example, Angell et al. (2011) provided autistic children with power cards informing them how to behave during classroom activity transitions, with no environmental changes made to ease these transitions. The authors reported that power cards effectively increased the 'compliance' and 'prosocial behaviour' of the autistic participants (206). Davis et al. (2010) used power cards to prompt conversation towards peers, with data recorded for the duration of on-topic attentiveness given to peers by autistic children. The authors failed to acknowledge or study the bidirectionality of communication, where a reciprocal understanding between both parties is critical for success (Brewer et al. 2016; Sasson et al. 2017).

Similarly, Koegel et al. (2013, 2133) concluded that incorporating interests into lunch activities enabled autistic children to 'appropriately socialise with typical peers' without

exploring the views or responses of peers or critically, whether the autistic children actually felt included. Kryzak et al. (2013) used eye gaze as a measure of responding to joint attention from an adult researcher, but this is a highly reductionist measurement considering attention can be provided in multiple ways, and eye gaze as a measure of engagement takes an ableist stance (cf. Bottema-Beutel et al. 2020). Apart from one study that provided a post-intervention feedback questionnaire for students (Koegel et al. 2013), there were no qualitative follow-ups conducted to identify whether the intervention benefitted the child from their own perspectives. Thus, children had little or no say in how their own interests were used by the researchers and what the advantages of this were for them.

Consequently, there is considerable scope for developing a more inclusive research agenda in this area. Increasingly, researchers and practitioners recognise that in order to understand inclusive practices more fully and to improve policy, practice and services (Ridout 2017), it is vital to access and incorporate children and young people's views about their educational experiences into educational planning and provision (e.g. Goodall 2018; Goodall and MacKenzie 2019; Zilli, Parsons, and Koshoff 2020; Hummerstone and Parsons 2020). Therefore, a critical next step for research with secondary-aged autistic pupils would be to gather their views on whether/how their own intense interests should be incorporated into their teaching and learning in ways that feel appropriate, respectful and motivating for them.

It is also important to place an emphasis on exploring the contextual/environmental factors that support or hinder the incorporation of intense interests into teaching and learning and whether this can be done in a more inclusive way. For example, based on Porter's (1995) inclusionary educational model (see also Thomas, Walker, and Webb 1998), research is needed that focuses on: the classroom and how this is designed and managed to respect and reflect intense interests; teaching and learning strategies, including a curriculum that facilitates collaboration between students and teachers through the incorporation of intense interests where appropriate (e.g. Wood 2019); embedding strategies for teachers which include promoting a more positive understanding of the potential role of intense interests for supporting engagement and learning (Guldberg et al. 2019), and then sharing these strategies as part of continuing professional development and effective communication across staff teams. In addition, the role of peers can be explored from a much more inclusive starting point, such as considering how they can find out about the interests of autistic children to develop mutual interests that support sustained dialogue and friendships (e.g. Daniel and Billingsley 2010; Stone, Mills, and Saggers 2019). Moreover, Wood (2019) concluded that knowing about children's interests and incorporating these into the curriculum to support motivation and engagement could be an important inclusive strategy for all children such that '… adjustments for pupils with SEND potentially benefit all learners' (15).

Limitations

The initial search strategy returned a total of 12,302 articles from seven searches across three bibliographic databases, plus snowballing through additional articles via hand-searching. Consequently, only the titles and abstracts of the first 200 hits from each search were screened due to the diminishing relevance of further articles and so it is

possible that some articles may have been missed. Other sources could have been missed since grey literature, and papers from countries outside of UK and USA were omitted. To further strengthen the reliability of data extraction, a second independent reviewer for all papers would have been beneficial. Participant characteristics should additionally be considered as out of total 17 children, only two of these were female. The androcentricity of research in autism is increasingly recognised as an area requiring targeted attention (Cascio, Weiss, and Racine 2020). Furthermore, for three of the six papers identified, the two principal authors were the same, further limiting the range of available evidence.

Conclusions

Despite recommendations made by the Autism Education Trust (Wittemeyer et al. 2012–15; Guldberg et al. 2019) to embed the interests of autistic children within the curriculum to motivate and engage learning, this scoping review identified only a very limited evidence base examining this topic for secondary-aged children, with a focus on deficit-based, social interventions and involving very small numbers of children overall. While findings from the studies were ostensibly positive overall, there was a preponderance of quantitative methods and social interventions with very little room for understanding the personal or pedagogical value of the strategies pursued. There was certainly limited evidence that intense interests were being applied in a strengths-based, inclusive way or to support academic, rather than social, learning. For many autistic pupils, the positive acknowledgement and appropriate incorporation of intense interests into the classroom could be a 'key to engagement' (Zilli, Parsons, and Koshoff 2020, 770) and so it seems vital to understand this much more fully from the perspectives of students and their teachers. This review shows that there is a considerable research gap in this area that future studies could usefully target and seek to address.

Note

1. A third review by Ninci et al. (2018) focused only on assessing and comparing study quality criteria and so is not considered further.

Disclosure statement

The authors declare no conflicts of interest.

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