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'Are we qualified enough for this?': a mixed-methods study of teachers' attitudes to social communication and interaction differences in autistic students

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ABSTRACT

Many autistic pupils are educated within mainstream settings, due to positive changes in inclusive education policies and legislation worldwide. It is acknowledged that teachers' attitudes can be a facilitator and a barrier to the success of an inclusive classroom, and teachers' knowledge of autism and training received on different educational needs are potential factors influencing attitudes. Few studies have assessed teachers' attitudes to social communication and interaction (SCI) differences in autistic students, or factors associated with these attitudes, yet SCI differences can significantly impact student-teacher and student-peer relationships in the classroom. The present study examined teachers' attitudes to SCI differences to understand how these relate to their general knowledge of autism, and the hours of training received on different educational needs. Data were collected via an online survey and semi-structured interviews. The results showed teachers' attitudes to SCI differences were significantly positively correlated with knowledge of autism, but not with hours of training received. The interviews generated four themes: (1) *manifestation of SCI differences in the classroom*, (2) *inclusive practices and barriers to inclusion*, (3) *the role of a teacher* and (4) *the value of training,* and highlighted generally positive teachers' attitudes towards autistic students with SCI differences, while acknowledging challenges.

Introduction

Autism Spectrum Conditions (ASC) present differently within the population and are partly characterised by social communication and interaction (SCI) differences (Arciuli and Brock 2014). SCI differences have been associated with some developmental challenges, and may interfere with academic performance and forming relationships with others (Bauminger and Kasari 2000; Holmes and Butcher 2019). Such differences include

the ways in which individuals integrate verbal and nonverbal communication skills, facial expressions, eye contact and gestures, different social approaches, reduced sharing of interests, emotions or affect, and differences in initiating or responding to social interaction (American Psychiatric Association 2013). This paper focuses only on the social communication and interaction aspects of the diagnostic criteria for autism. In addition, this paper adopts identity-first language (e.g. 'autistic' and 'autistic person') throughout to limit the consequences of linguistic framing as described by Botha, Hanlon, and Williams (2021).[1]

Thanks to an increased awareness of the need for social cohesion and equality, national and international educational policies have emphasised the importance of inclusive education (e.g. Department for Education and Employment, London (England) 1997; United Nations Educational, Scientific and Cultural Organisation [UNESCO] 1994). The most recent UNESCO guidelines (2017) acknowledge inclusion as an overarching principle which should guide all educational policies and practices, and it has been defined as a process of designing schools to support and benefit all learners (Artiles and Kozleski 2016). As a result, the prevalence of autistic students being educated in mainstream classroom settings has increased during the last decade (Maenner 2020).

The benefits of inclusive education have been highlighted in research studies. A review by Kefallinou, Symeonidou, and Meijer (2020) reported that pupils in inclusive settings may experience greater social and academic achievements, paid employment after school and social life within the community when compared to pupils in segregated settings. It has also been reported in an earlier meta-analysis that students in inclusive classrooms outperformed those in segregated settings in both academic and social domains (Oh-Young and Filler 2015).

Teachers' attitudes towards inclusion are pivotal to its success within mainstream settings (Ainscow 2007; Avramidis, Bayliss, and Burden 2000; Loreman, Deppeler, and Harvey 2010). This may be due to the notion that professional attitudes can act to either facilitate or constrain the implementation of innovative and challenging policies (Avramidis, Bayliss, and Burden 2000). Teachers' attitudes towards autistic pupils may guide their behaviour and teaching practices (Subban and Sharma 2005), influence their acceptance of these children in their classrooms and impact their willingness to accommodate students who present with greater behavioural and social challenges (Stauble 2009).

The general view emerging from the existing literature seems to be that teachers hold positive attitudes towards the inclusion of autistic students. A recent systematic review by Russell, Scriney, and Smyth (2022) which included 13 studies and 3247 educators concluded that most educators favoured the inclusion of autistic students in the mainstream classroom and that attitudes did not vary according to educator type. This review complements an earlier review by Roberts and Simpson (2016), who also concluded that most attitudes towards inclusion held by educators were positive. Both reviews highlighted key factors known to influence teachers' attitudes, including teaching experience and training, and their general knowledge of autism.

Researchers have identified positive relationships between knowledge of ASC and educators' attitudes towards the inclusion of autistic pupils (Lu et al. 2020; Segall and Campbell 2012). Despite this, a common conclusion emerging from research assessing

the relationship between teachers' attitudes to inclusion and their knowledge of autism, is that teachers often demonstrate insufficient knowledge of ASC (Segall 2008; Shetty and Rai 2014). A systematic review by Gomez-Mari, Sanz-Cervera, and Tarraga-Minguez (2021) which analysed 25 articles from a wide range of cultures reported that, in general, teachers had limited self-reported and observed knowledge of ASC. Lack of knowledge of ASC among teachers may be problematic and can have a negative impact on the implementation of inclusive education given the reported positive relationship between knowledge about autism and attitudes (Lu et al. 2020; Segall and Campbell 2012). Lack of knowledge may be related to poorer attitudes which could negatively affect inclusive teaching practices and behaviours.

In addition to knowledge of ASC, the influence of training in Special Educational Needs (hereafter referred to as Different Educational Needs; DEN) on teachers' attitudes to inclusion has also been explored. DEN refers to different education provisions made for individuals with learning difficulties or disabilities (Department for Education 2015). It may be important for teachers to engage in additional training in DEN due to the notion that autistic pupils can experience learning difficulties in classroom settings as a result of differences in SCI (Department for Education 2015). In a survey of 155 primary-school teachers from Greece (Avramidis and Kalyva 2007), it was reported that teachers who had engaged in professional self-development or training in DEN at some point in their careers held significantly more positive attitudes towards inclusion in general, than those who had not engaged. Further details of their findings highlighted that participants felt the greatest degree of classroom adaptation was needed for autistic children and those with sensory impairments, brain injury or neurological disorders, compared to children with learning differences of a mild to moderate nature. Further, the teachers also reported feeling the most ill-prepared at the prospect of including autistic children, sensory differences or neurological disorders, in comparison to other mild to moderate learning differences. This suggests that training in DEN may improve teachers' attitudes towards inclusion, however, teachers may feel ill-prepared for the inclusion of autistic students, perhaps impacting their attitudes towards this.

Sharma and Nuttal (2016) assessed the attitudes of 30 pre-service teachers from an Australian university before and after they participated in a nine-week long course which focussed on the benefits of inclusive education and effective teaching practices for children with DEN. The participants' attitudes and efficacy significantly increased following the completion of the course, whilst their concerns decreased significantly. This further supports the view that training in DEN for teachers can positively affect their attitudes towards inclusive education as a whole. However, the impact of DEN training on teachers' attitudes towards the inclusion of autistic students specifically is unknown. It is important to note that these findings may have been subject to participant self-selection bias, as the course was not mandatory and it is possible that participants who opted to take the course were more open to inclusion, in turn leading to increased positive attitudes after course completion.

Different findings were reported by Leonard and Smyth (2022) who investigated whether years of teaching experience and training in DEN or inclusion influenced the attitudes of 78 Irish primary school teachers towards inclusive education. Over half of the participants held negative attitudes towards the inclusion of autistic pupils in the mainstream classroom, with only 10% of participants demonstrating positive attitudes.

Further, teachers who had received training in DEN or inclusion did not have significantly different attitudes from those who had received no training, nor did their attitudes differ based on the type of training they had received.

Qualitative research is useful in developing a rich understanding of teachers' attitudes to inclusive settings, and the factors which influence such attitudes, by contextualising and bringing greater depth to quantitative findings. For example, Anglim, Prendeville, and Kinsella (2018) explored the lived experiences of six Irish primary school teachers in relation to teaching autistic pupils in mainstream using semi-structured interviews. Teachers reported feeling a lack of confidence, or some degree of apprehension, at the initial prospect of teaching an autistic student. Additionally, teachers felt uncertain about managing the challenging behaviours, which they related to a lack of experience in working with autistic students and a lack of adequate training in DEN. Teachers also felt that they lacked access to resources, support and advice, which often resulted in them developing creative and innovative strategies to cope with the behaviours of their autistic students (Anglim, Prendeville, and Kinsella 2018). Similarly, other qualitative research suggests that teachers lack confidence in their ability to teach pupils with DEN as a result of a lack of specific training, time, resources and access to DEN support (Ferriday and Cantali 2020; Leatherman and Niemeyer 2005). These studies further emphasise the importance of adequate training and resources in teachers attitudes to inclusive education as a whole. However, qualitative research should not be used in isolation when looking to form conclusions regarding teachers' attitudes, as qualitative findings are often formed from small sample sizes and are subject to bias. Therefore, it may be useful to consider qualitative research in light of quantitative findings when assessing teachers' attitudes, to combine the strengths and minimise the weaknesses of both quantitative and qualitative data types (Creswell and Creswell 2018; Shah and Corley 2006).

Although the literature is sparse, there has been some interest in investigating teachers' attitudes specifically regarding SCI differences in autistic students. SCI differences in autistic students can have a significant impact on both student-teacher and student-peer relationships in primary (Gray and Donnelly 2013) and secondary settings (Hedges et al. 2014; Saggers, Hwang, and Mercer 2011). Teachers have reported that the need to ensure whole class instructions are unambiguous for their autistic students has resulted in inhibited typical teacher-student interactions (Emam and Farrell 2009; Hay and Winn 2005). Moreover, Emam and Farrell (2009) reported that teachers felt an increased number of demands on them as a result of difficulties students experienced in social behaviours within group activities (Emam and Farrell 2009). These findings may suggest negative attitudes towards SCI differences held by teachers, however, this warrants further investigation due to these findings being limited and dated.

As outlined above, the relationship between teachers' attitudes towards the inclusion of autistic pupils in mainstream settings and factors which influence these attitudes have been widely explored. However, no existing research has examined teachers' attitudes towards SCI differences specifically, and how such attitudes are related to DEN-related training and their knowledge of autism. As SCI differences are highly prevalent amongst the autistic population, it is important to understand their relationship with teacher's attitudes, because such attitudes may play a role in the success of inclusive settings and therefore the outcomes of autistic students. Moreover, understanding contributing

factors to such attitudes, including knowledge and training, can provide context to the relationships identified and provide guidance for schools and teacher training programs.

Using a mixed-methods design, this paper aims to develop a more comprehensive understanding of teachers' attitudes towards SCI differences in autistic students, and how these may be influenced by their knowledge of autism and the amount of DEN-related training received. DEN-related training was chosen as a variable rather than autism-specific training as this is more widely accessible for teachers.

The research questions are:

(1) What are teachers' attitudes towards SCI differences in autistic students?
(2) What is the relationship between teachers' attitudes towards SCI differences, knowledge of ASC and hours of training related to DEN?

Methodology

Methodological approach

A triangulation mixed methods research design was employed to obtain different but complementary data on the same topic (Morse 1991). This involved the collection and analysis of quantitative and qualitative data concurrently, but separately. A quantitative online survey provided an overview of participants' attitudes toward SCI differences in autistic students, and how they related to their training experiences and their knowledge of ASC. The online survey consisted of the Autism Stigma and Knowledge Questionnaire (ASK-Q; Harrison et al. 2017) and an adapted version of the Autism Attitude Scale for Teachers (AAST; Olley et al. 1981). The ASK-Q has been noted as a reliable and sensitive tool for assessing individuals' knowledge of ASC (Lu et al. 2020), whilst the subdomains present excellent reliability and good cross-cultural validity (Harrison, Paff, and Kaff 2019). The AAST was adapted to specifically target teachers' attitudes towards autistic students' SCI differences, rather than autism in general. Moreover, in the original study conducted by Olley et al. (1981), the AAST presented with high internal consistency (α = .91). More recently, Park and Chitiyo (2011) replicated these findings presenting an internal consistency of (α = .87). Qualitative data were collected via individual semi-structured interviews to facilitate in-depth explorations of participants' attitudes. Both data types were used to address the two research questions in this investigation. The Research ethics committee of the University of Reading granted this research favourable ethical opinion for conduct. Participants provided written consent prior to taking part.

Participants

The study took place in Berkshire, United Kingdom. Teachers were recruitd by contacting local schools. Twenty DEN coordinators or headteachers were contacted and asked to pass on the details of the online study to their colleagues. DEN coordinators are responsible for the operation of different educational needs policies in schools, supporting children and families, overseeing Health and Care Plans for students and ensuring that teachers are taking responsibility for the education and progress of all students

(Cowne, Frankl, and Gerschel 2018). Teachers who participated in the survey were encouraged to pass on the details of the study to other teachers to try to increase the sample size, resulting in a snowball sampling recruitment technique. The final stage of the online survey asked participants to leave their contact details if they wanted to participate in a follow-up interview. Recruited participants were early years practitioners (i.e. those working within nursery or preschool settings), teachers and deputy or headteachers from preschool, primary and secondary mainstream settings. Teachers from different settings were recruited to ensure the inclusion of a variety of perspectives regarding SCI differences in the classroom. To maintain anonymity of the participants, they were not asked to share which school they were from or which specific area of the UK they were from.

Thirty participants completed the online survey, of which 6 participated in the follow-up interviews. As the qualitative interviews aimed to gather in-depth descriptions of participants' attitudes, the sample was necessarily small. Sample demographics for the 30 teachers who participated in the online survey are presented in Table 1. As depicted in this table, all stages of education and the different roles involved are represented within our sample. We were also able to recruit educators of varying experience and hours of additional training. With this in mind, the sample is considered representative of the teaching population, despite the small sample size. It is recognised that a sample of six self-selected participants who took part in the interviews is not expected to be representative of all teachers within the population, however, demographic details of the interviewed participants have also been included in Table 1.

Measures

Online survey. The online survey collected information about participant characteristics, their knowledge of ASC and their attitudes towards SCI differences amongst autistic students, using a combination of previously validated measures and measures developed for this study, which are detailed below.

Participant characteristics. Teachers were asked to report their age, ethnicity, gender and teaching position. Additional questions gathered information on participants' teaching experience, training and their confidence in applying such training in the classroom. Participants were then asked to explain why they felt this way (i.e. confident or not confident in applying their training) using an open-response text box. Three further open-response questions gathered qualitative data regarding participants' understanding and experiences of autism and SCI differences.

Attitudes. Our adapted version of the AAST (Olley et al. 1981) has 10 items, and participants were instructed to respond to each statement using a 5-point Likert scale: 1 – strongly to 5 – strongly agree (see Appendix A). The wording of the questions in this measure was adapted to specify SCI differences. Some example items include: 'I have the knowledge and skills to successfully include autistic children with social communication difficulties in my classroom', 'Regular schools are too challenging for autistic students with social communication differences' and 'A good teacher can do a lot to help social communication challenges in the classroom' (see the Appendix for all questions). A total attitude score (0-50) was computed by summing the scores on the individual

Table 1. Demographic characteristics of participants.

Demographic characteristic	Frequency of participants in survey (N)
Gender	
Male	6
Female	23
Other	0
Prefer not to say	1
Age	
20–30	13
31–40	10
41–50	2
50+	4
Prefer not to say	1
Ethnicity	
White	23
Asian or Asian British	1
Black, African, Caribbean or Black British	4
Mixed or multiple ethnic groups	1
Other ethnic group	0
Prefer not to say	1
Teaching position	
Early years	6
Primary	10
Secondary	8
Deputy/headteacher	4
Non-responsive	2
Number of hours of training related to DEN	
0–5	16
6–15	9
16–25	2
25–40	2
41+	1
Years of teaching experience	
0–5	10
6–10	8
11–15	5
15–20	4
20+	2
Non-responsive	1
Gender	
Male	1
Female	5
Other	0
Prefer not to say	0
Age	
20–30	2
31–40	2
41–50	1
50+	1
Prefer not to say	0
Ethnicity	
White	5
Asian or Asian British	1
Black, African, Caribbean or Black British	0
Mixed or multiple ethnic groups	0
Other ethnic group	0
Prefer not to say	0
Teaching position	
Early years	1
Primary	3
Secondary	1
Deputy/headteacher	1
Non-responsive	0

Table 1. Continued.

Demographic characteristic	Frequency of participants in survey (N)
Number of hours of training related to DEN	
0–5	4
6–15	0
16–25	1
25–40	0
41+	1
Years of teaching experience	
0–5	2
6–10	0
11–15	2
15–20	1
20+	1
Non-responsive	

items. Negatively worded items were reverse-scored and higher total scores reflected more positive attitudes.

Knowledge of ASC. Teachers completed the ASK-Q (Harrison et al. 2017). It has 49 items covering four subdomains: (i) diagnosis/symptoms (ii) aetiology (iii) treatment (iv) stigma. Participants responded using the dichotomous answer choices 'agree' 'disagree' or 'I don't know' to each corresponding statement. One point was assigned to each correct item to give a total knowledge score (0-48), as well as individual sub-scores for each subdomain. 'I don't know' responses were coded as incorrect due to participants making indirect assessments, meaning they do not know the correct answer (Harrison et al. 2017). The stigma subdomain was reverse coded, with lower scores indicating stigma endorsement and higher scores representing the failure to endorse stigma. Total knowledge scores below 29 were classified as inadequate (Harrison et al. 2017). For the stigma subscale, scores below 2 were classified as stigma-endorsing (Harrison et al. 2017).

Semi-structured interview. Semi-structured interviews took place via Microsoft Teams. They were audio-recorded and conducted by the first author. Interviews followed a flexible topic guide (see Appendix B) which aimed to bring greater depth to the quantitative findings. All topic guide questions were constructed to limit the possibility of influencing the participant's interpretation of the question or the way in which they responded to them (Cohen, Manion, and Morrison 2007). Interviews lasted up to 45 min and were terminated once all the questions in the topic guide had been answered, or when participants felt they had nothing else to add. Each interview was transcribed verbatim, ensuring all identifying information was removed from the transcripts. The researcher kept detailed field notes throughout the interview process to guide interpretation, themes and future investigations (Merriam 2009).

Data analysis

Quantitative analysis. Quantitative data were statistically analysed using version 25 of SPSS. Outlier analysis revealed one outlying data point under the training variable, which was excluded from further analysis. Descriptive statistics were used to characterise the sample and examine participants' attitudes to SCI differences in autistic students. Additionally, correlational analyses were carried out to assess the relationships

between teachers' attitudes to SCI differences, their knowledge of ASC and their hours of DEN training.

Qualitative analysis. Thematic analysis (TA; Braun and Clarke 2006) was used to analyse the qualitative interviews. TA is particularly important for research conducted in education, due to the heterogeneity of the work involved in learning and teaching (Clarke and Braun 2013). The coding process was both inductive and cyclical due to codes both gradually emerging from the data and being refined and adjusted as each new transcript was analysed or revisited, resulting in a constant comparative approach (Pope, Ziebland, and Mays 2000; Saldaña 2021). Systematic linkages were then formed, which enabled the researchers to identify emergent patterns within the data. This allowed for the generation of wider themes and subthemes.

Results

What are teachers' attitudes to SCI differences in autistic students?

Participants' attitudes towards SCI differences in autistic students were, on average, positive ($M = 42.67$, $SD = 3.58$), with 83% of participants achieving a total attitude score between 40 and 50 on the AAST. See Table 2 for descriptive statistics from the survey responses.

To explore this finding further, follow-up interviews were conducted. Three themes related to participants' attitudes emerged from the data: (1) *the manifestation of SCI differences in the classroom*, (2) *inclusive practices and barriers to inclusion* and (3) *the role of the teacher*.

The manifestation of SCI differences in the classroom

The participants demonstrated some knowledge of the characteristics associated with SCI differences in autism. For instance, teachers highlighted that autistic students often show differences in understanding social cues and that this can impact their interactions with peers and ability to facilitate friendships.

P2, deputy headteacher:

The way that they interact with children is different in the sense that they might not pick up on, kind of, the normal cues that someone would socially understand and therefore might not understand the impact that they're having on each other.

P6, early years' educator:

When it comes to the relationships, maybe with their peers, they need a lot of help facilitating those and maybe understanding some different social norms of things we should and shouldn't do.

Table 2. Descriptive statistics for responses to the survey.

	Minimum	Maximum	Mean	Std. deviation
Attitudes	36	50	42.67	3.58
Knowledge	23	55	36.50	6.30
Hours of training	0	30	6.91	7.24

Inclusive practices and barriers to inclusion

Almost all participants held positive attitudes toward students with SCI differences and needing to adapt their style of communication and teaching practices to meet their autistic students' needs. Most teachers felt that having to adapt their style of teaching or their communication to meet the needs of their autistic students with SCI differences was a requirement and also crucial for their student's success (e.g. 'if you don't differentiate the way you enact or teach those pupils, it can impact their learning to quite a large extent because they won't necessarily be getting everything you are delivering as a teacher' P5, secondary teacher). Furthermore, one teacher felt that 'you have to adapt it [communication styles and teaching practices] accordingly and make it work for them, so that they're not uncomfortable' and they related this to 'trying to include them in the whole environment that they're in, rather than taking things away with them' (P1, primary teacher).

Teachers also agreed that being adaptable to SCI differences is not only necessary, but helpful for other children in the class who may or may not have other conditions that affect their learning, such as ADHD or dyslexia.

P6, early years educator:

The teachers might be thinking, 'oh, I'm doing all of this extra work' just, for example, to help this one child, but I think as they would go on, they realize actually this is gonna help not just this child, but it could help many other children within the class or even children who have no sort of special needs whatsoever.

One participant also felt that teachers might worry about the inclusion of autistic students with SCI differences due to the added pressure that teachers feel regarding their 'key students' (i.e. children with different learning needs that require additional support) who are at the forefront of discussions and planning.

P2, deputy headteacher:

I mean, these are key children year after year when you get your new class, they are key children that you've spoken about. […] the transition is hugely important for them and I think it kind of puts them at the forefront, and if you are not experienced and you've never dealt with that before it is a worry.

Despite participants feeling positively toward autistic students with SCI differences, many teachers described factors which may contribute to teachers' negative attitudes. For example, teachers' mindset was felt to play a role in their attitudes, suggesting that those who are more motivated or willing to accommodate autistic students are likely to hold more positive attitudes ('I think that there's definitely a group of teachers who are much more willing than others, but I think that comes with the day-to-day pressures and either a lack of ambition to want to make it work for them, or just an easy life' P2, deputy head teacher). The level of the children's needs was also mentioned as a possible factor impacting a teacher's attitude toward them due to additional pressures on teachers, suggesting teachers may feel more negatively toward students with greater additional needs. Some teachers also touched on how the resources available to them within the school and the lack of external support provided can negatively influence their attitudes.

P5, secondary teacher:

Most teachers would react very positively to that pupil and try and support them as best they can. But I think it's very dependent on the school and the resources of the school as to the success of that.

P6, early years educator:

I know some children in our school have iPads that help them with communication or other communication aids, but sometimes, I think in a mainstream classroom, that can be maybe quite overwhelming for a new teacher who doesn't normally use those aids. It can be probably a big learning experience for that teacher as well. So, it's just I think it just depends on the level of support that the child needs and whether the teacher knows how to access those things themselves.

The role of a teacher

A common theme relates to the role of a teacher and the important influence they can have on the outcomes of autistic students with SCI differences. A key part of a teacher's role identified by all participants is the ability to build a relationship with their students, to better understand them ('it's that understanding and relationship with the child that ultimately gets the success' P2, deputy headteacher). Teachers highlighted that no two children are the same and so teaching is about learning how to support each child's individual needs, not taking on a 'one size fits all' approach. Also, the teachers highlighted that children who might not have an autistic diagnosis may still have social communication difficulties and it is important for teachers to understand and support all children.

P4, primary teacher:

And I think that it's all about building positive relationships and making that child feel like you understand their behaviours. We're always taught behaviour, you know, lashing out or anger and everything … there's reasons behind it and you just gotta be there to find those reasons, I guess.

P2, deputy headteacher:

So, I think that sometimes it's about trying to, like maintain a learning environment that is suitable for all of them and that, and I think that's really difficult when you first start teaching to know that, yes, this child might be autistic. And yes, this child might not be, but some of the ways in which they communicate are or the difficulties they have with socialization and communication are quite similar and it's trying to balance all of that. I think that you need to ensure that the classroom, that you empower the children just to sort of help themselves as much as they can.

Participants described a 'balancing act', whereby they find it difficult to balance the needs of all their students within the classroom. Teachers also stressed the importance of supporting pupils' well-being and social communication skills while also educating them, emphasising the importance of good communication skills as the foundation for successful education. This difficulty may result in teachers feeling added pressure, particularly in situations where additional teaching support, such as a teaching assistant, is not available.

P5, secondary teacher:

So, if you have a wide variety of learners, so you could have, you can have a pupil with autism, but also have two pupils that are dyslexic, three pupils that have English as an additional language requirement. So, trying to balance all of that, all of those learning needs across pupils can be quite challenging.

P3, primary teacher:

If you haven't got an assistant teaching assistant in the classroom and you've got 20 other children, or in some cases 25 other children, but you've got this one child who is the hardest out of your whole class ... the other children can't benefit from the teacher because that teacher is sometimes having to work with that child on a one-to-one basis.

P4, primary teacher:

I think the challenge is trying to maintain a learning environment where everybody feels supported in their own unique way

One teacher argued that their role often involves some planning and preparation that can go beyond the descriptive term of an 'educator'. They felt that successful education requires there to be a positive relationship between the teacher and student which demonstrates understanding and acceptance. They also note that this is something which requires time and effort on behalf of the teacher.

P4, primary teacher:

I guess it's like thinking that teachers educate, and we are educators and that's all we do. [...] but how can we educate any child if they're not ready to learn? Like we need to get children ready to learn in order to help them to do that [...]you've gotta put the time and effort into the small things I think, and then they don't become big things. And I think that is all about building positive relationships and making that child feel like you understand their behaviours. We're always taught behaviour, you know, lashing out or anger or everything, but there's reasons behind it and you just gotta be there to find those reasons, I guess.

What is the relationship between teachers' attitudes towards SCI differences, knowledge of ASC and hours of training related to DEN?

To answer this research question, correlational analyses were run between teachers' total attitude scores, their total knowledge scores and their self-reported hours of DEN training related. In addition, qualitative data were provided from the interviews to provide more in-depth information which would add explanatory power to the quantitative analyses. A correlation coefficient depicted a significant positive correlation between teachers' attitudes to SCI differences and their knowledge of autism (r_s (30) = 0.46, $p <$ 0.05) (see Figure 1).

A second correlation coefficient depicted no significant relationship between teachers' attitudes to SCI differences and the hours of training relating to DEN they have received (r_s (29) = 0.14, $p >$ 0.05). Figure 2 depicts this non-linear relationship.

Qualitative analysis – the value of training

This theme emerged from the qualitative interviews and encompasses teachers' perceptions of training and the value they see in it, compared to learning whilst in practice.
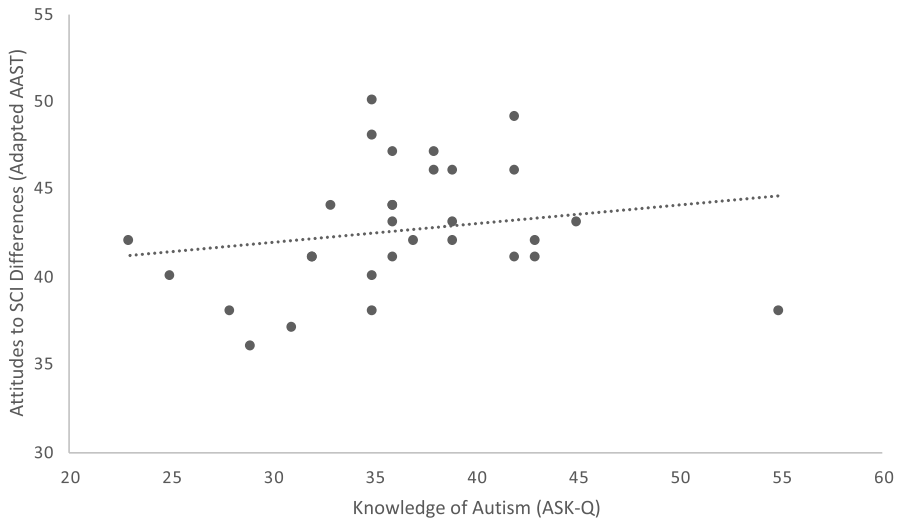
Figure 1. Scatterplot showing the significant positive relationship between teachers' attitudes and their knowledge of autism ($N = 30$).

Although some teachers felt 'there's nothing better than going to a session and being taught by a specialist' (P1, primary teacher), others felt that 'you can never just be given a handbook of autism, and like this is how you deal with it' (P4, primary teacher). Despite this, some teachers also argued that there was a lack of training given to teachers regarding SCI differences specifically and that teachers could benefit from attending training sessions.
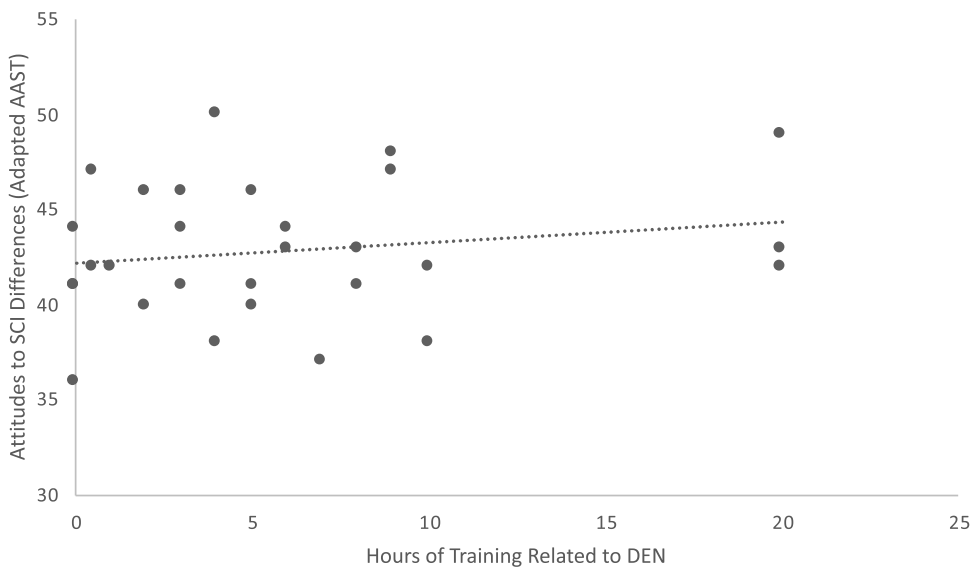

Figure 2. Scatterplot showing the non-significant relationship between teachers' attitudes and the hours of training related to DEN they have received ($N = 29$).

P3, primary teacher:

You do get training, but very rarely it's targeted on like a specific DEN need. I personally would benefit from having more training in that area.

P5, secondary teacher:

I think also there's a lack of training with regards to specific learning needs in teaching, so for example, in relation to autism or dyslexia or dyspraxia, you know any of those learning needs. I'd say as a teacher I've had lots of training and relation to differentiation more generally, but nothing specifically towards autism.

Some participants felt that new teachers coming into the teaching profession are underprepared to manage the needs of autistic children's SCI differences. They suggest that their teacher training courses perhaps did not prepare them enough and that they underestimated the extent to which DEN needs would impact their daily life.

P2, deputy headteacher:

I think if you're a new teacher coming into the profession now and let's say, for example, all of a sudden, you've got two autistic children in your class. I could definitely sit here hand on heart and say that they are not ready to do that, they're not ready, or they don't have the training or the experience.

P4, primary teacher:

I didn't specialize in DEN, and I definitely left uni with quite a – I didn't understand it as much as I do now. I think that I never thought that like additional learning needs would affect my day-to-day as much as they have since I started teaching.

Further, many teachers recalled leaning from their peers with greater experience or expertise for guidance regarding working with autistic children, rather than referring to their training. This suggests that although teachers did see the importance of training, they value the expertise of peers over training.

P5, secondary teacher:

I'd say there's probably, a gulf in education whereby whilst the training is available it's not regularly, especially in my context, it's not regularly received by the teachers, it's given more to a specific member of staff and then you rely on that member of staff disseminating that information to colleagues.

P6, early years educator:

Talking to more experienced teachers about what strategies or techniques they use, what visuals, what communication aids as suggestions – that's where they're gonna be able to get some answers on possible solutions.

Discussion

The study's two research questions focused on establishing a deeper understanding of mainstream teachers' attitudes to SCI differences in autistic students (RQ1) and exploring the relationship between such attitudes, teachers' knowledge of ASC and the hours of

DEN training they have received (RQ2). To the best of our knowledge, this is the first study to address the gap in the literature assessing teachers' attitudes to SCI differences in autism. Each research question is discussed in turn.

Teachers' attitudes towards SCI differences in autistic students were mainly positive, as most scored highly on the adapted attitude measure (AAST; Olley et al. 1981). This is in line with some previous literature (Roberts and Simpson 2016; Russell, Scriney, and Smyth 2022). However, it differs from Emam and Farrell's (2009) study which argued that tensions experienced between mainstream teachers and their autistic students were inherently shaped by ASC-related manifestations, specifically those concerning difficulties in social and emotional understanding. Our qualitative data are useful in providing an in-depth understanding of the teachers' attitudes and contextualising why and how their self-reported attitudes might differ from previous research (Emam and Farrell 2009). The qualitative interview responses were consistent with the quantitative data. Many teachers felt that including autistic students in mainstream classrooms was crucial and they felt obliged to make adaptations for those children, according to their differences in SCI. It was also suggested that such adaptations were not only beneficial to the autistic pupils but to the teachers themselves and other students in the classroom (both neuro-typical and neuro-diverse). This was due to teachers feeling that other students in a classroom had similar communication challenges, and therefore adapting the way they gave whole class instructions, for example, would help many students in the class, and were therefore worth the additional time and effort. As such, teachers appeared to perceive adaptations as a beneficial requirement, rather than a burden.

In addition to sharing their views on SCI differences within the classroom, many participants referred to the attitudes of other teaching professionals whom they have encountered. It was suggested that negative attitudes in other professionals may come as a result of the level of support a child might need, with teachers reportedly feeling less positively towards pupils with greater needs. This supports the suggestion that teachers may have more positive attitudes towards the inclusion of autistic students with no significant difficulties, when compared to those with behavioural or cognitive difficulties (Jury et al. 2021). Moreover, some participants felt that there is a lack of preparation for teaching autistic students with SCI differences within teacher training courses. The mentioned lack of training for newly qualified teachers may result in greater stress as a teacher attempts to accommodate their student's needs, and increased stress among teachers may lead to consequent negative attitudes. This finding is consistent with Anglim, Prendeville, and Kinsella (2018) who reported that teachers felt apprehensive at the initial thought of teaching autistic students which was often due to a lack of access to resources and advice from specialists.

Participants also described difficulties they and other professionals experienced in balancing the needs of all their students. Whilst acknowledging that autistic students require additional support from their teachers, they also have to teach students with DEN or other challenges. Teachers related this challenge to a lack of external support received, explaining that teachers often overextend themselves to balance the needs of the entire classroom. This emphasises teachers' concerns about lack of resources and external support may be important influencers of negative attitudes towards autistic students with SCI differences.

It should be noted that although the participants generally felt positively towards the inclusion of autistic students, they were able to recognise and acknowledge the challenges associated with balancing the needs of a classroom and a lack of additional support from specialists. Therefore, it can be suggested that teachers might hold positive attitudes towards the inclusion of autistic students, however, they recognise and accept that inclusion does not come without any challenges.

With regard to this investigation's second research question, the results demonstrated a significant positive correlation between teachers' attitudes to SCI differences and their knowledge of ASC. This is consistent with existing findings (Lu et al. 2020; Segall and Campbell 2012) and suggests that teachers with greater knowledge of ASC are likely to hold more positive attitudes towards SCI differences. It was also found that the sample of teachers in the present investigation demonstrated, on average, adequate knowledge of ASC. This contrasts claims made by other studies which reported that teachers' knowledge of ASC was generally poor (Amr et al. 2016; Liu et al. 2016; Shetty and Rai 2014). The difference in teachers' knowledge of ASC between our study and others may be due to the measure of knowledge used in the present investigation. Whilst Segall (2008) used a similar 15-item measure of knowledge which considered diagnosis and symptomology, treatment and aetiology, the current study used a more comprehensive 49-item measure which considered participants' endorsement of stigma, as well as the other mentioned subscales. Therefore, the participants in the current investigation may have had a greater opportunity to demonstrate their knowledge of ASC due to the use of a larger scale measure, resulting in higher knowledge scores, on average.

The results of the second correlation analysis revealed a non-significant relationship between participants' attitudes and the hours of DEN training they had received. This contradicts earlier research by Avramidis and Kalyva (2007), who found that teachers with more positive attitudes towards inclusion had engaged in professional self-development or training in DEN at some point in their careers. The different findings of the current study may be explained by the fact that over half of the sample ($N = 16$) had received between 0 and 5 h of training related to DEN. Because of this, it is difficult to assess the relationship between participants' attitudes and hours of training, if most participants had received little-to-no training at all. Despite this, the non-significant relationship is consistent with findings reported by both Hastings and Oakford (2003) and Leonard and Smyth (2022), who also found no significant impact of training in DEN or inclusion on teachers' attitudes. However, such similarity in findings should be viewed with caution, due to many participants in the present study receiving little-to-no DEN training, therefore limiting the ability to correlate the two variables. Consequently, the relationship between the two variables appears to be unclear and warrants further investigation.

It is important to note that the variables of 'knowledge' and 'training' used within this study are related, in the sense that participants' source of knowledge could be a direct result of the training they have received. Therefore, it is likely that knowledge of ASC should be more directly related to attitudes.

Information from qualitative interviews may explain why participants' attitudes were not significantly related to the hours of training they had received. For instance, most participants agreed that teachers were not provided with enough training at the outset of their careers to confidently teach autistic students. Furthermore, although training was useful in developing teachers' basic knowledge and understanding of autism, it

could only take teachers so far in terms of putting theory into practice. A few teachers placed greater value on learning from other professionals or having discussions with their peers regarding their students than attending formal training. This implies that although teachers were able to see the benefits of DEN training, many did not place value on it and instead, stressed the importance of learning from other professionals with greater experience when managing students with additional needs. This is in line with findings by Hastings and Oakford (2003), who reported that teacher training courses had little impact on student teachers' attitudes towards students with DEN, and therefore other methods of making an impact on teachers' attitudes were needed.

Limitations and future directions

This investigation is subject to participant self-selection bias, as participants chose whether to participate in the study. Hence the recruited participants may have been teachers who shared similar perceptions of autism and its characteristics. Also, the study's findings should be considered with caution, due to the possibility of social desirability bias; the researcher cannot be certain that participants were conveying their honest opinion due to what they might have perceived as a 'socially acceptable' opinion. Although this effect was minimised during the quantitative survey by ensuring participants that their responses were anonymous, it is possible that the data from the qualitative interviews were subject to social desirability bias due to the participants discussing their attitudes directly with the researcher in a non-anonymous format. In addition, our sample size is small which limits the generalisability of the findings and may not be fully representative of all teachers. As we did not collect information of schools that the teachers were working in, it is possible that there may have been teachers from the same school/s which are committed to inclusion practices and this could have biased the results. A bigger sample of teachers with varying degrees of teaching experience and from a wider geographical area may provide a deeper understanding of their attitudes and aid the generalisability of the findings.

The current study is also limited in that it only focuses on teachers' attitudes towards one of the diagnostic criteria (social communication and interaction) and not on attitudes towards restricted and repetitive patterns of behaviours, interests and activities. It is well known that the most vulnerable students who are at risk of social exclusion are those who have behaviour challenges (De Bruin, 2020) and future research studies should consider both the social and behavioural aspects of autism when investigating teachers' attitudes.

Furthermore, future research would benefit from utilising a measure of implicit attitudes, to gather data regarding both teachers' implicit and explicit attitudes towards SCI differences in autistic students. Since the topic of inclusion is sensitive in nature, it may be that teachers express explicit positive attitudes towards their autistic pupils, however, withhold some implicit negative attitudes due to fear of being judged for their opinion (Pit-ten Cate and Glock 2019). By measuring implicit attitudes, response bias will be reduced, as implicit attitudes may be less sensitive to social desirability (Lüke and Grosche 2018).

Conclusion

This investigation adds weight to the existing literature whereby teachers' attitudes to autistic students with SCI differences are mostly positive. However, it suggests that a

lack of support from both specialist services and internal resources can contribute to teachers' negative attitudes toward autistic students. Moreover, it may be that by introducing more compulsory DEN-related modules in teacher training university courses, teachers' knowledge of ASC and its characteristics can be improved from the outset of their teaching careers, in turn generating more positive attitudes to SCI differences. As suggested in the literature, improving teachers' attitudes toward autism can facilitate a more successful inclusive classroom, resulting in greater social and academic outcomes for autistic students.

Note

1. Autistic people's language preferences have been the subject of research and results show that the majority of autistic individuals prefer to self-identify using identify-first language, perhaps due to arguments from self-advocates and scholars who believe that identity-defining features, such as autism, cannot be separated from the individual (Bury et al. 2023; Kapp et al. 2013; Taboas, Doepke, and Zimmerman 2023). It is important to raise awareness of this issue of language choice and limit the use of non-preferred language by autistic individuals within the literature, due to its influence on societal perceptions, public policy, clinical practice and research directions (Kenny et al. 2016; Vivanti and Messinger 2021).

Disclosure statement

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Philippa Lewis completed a Masters in Clinical Psychology at the University of Reading before moving onto the University of Southampton for further study and clinical training.

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