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Children with Language Impairment: Prevalence, Associated Difficulties, and Ethnic Disproportionality in an English Population

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Language impairment (LI) is one of the most common types of special educational needs (SENs), not only as a child's primary need but also as a secondary domain associated with other types of SENs. LI is a risk factor for children's later development, being associated with enhanced behavioral, emotional, and social difficulties, in particular peer problems and emotional difficulties; literacy difficulties, including both reading and writing; and reduced levels of academic achievement. Risks arising from LI in early childhood may also have an impact through adolescence and into adult life. This study uses national data from the UK government's annual census of all students aged 5–16 years attending state schools in England at four time periods between 2005 and 2011, over 6 million students at each census. We analyze the data on students with speech, language, and communication needs (SLCN), the Department for Education's category for students with LI, to examine the overall prevalence of SLCN and the variations in prevalence associated with child factors namely, age, gender, ethnicity, socioeconomic disadvantage, and having English as an additional language, and with contextual factors, namely the school and local authority. We also examine disproportionality of identification of SLCN for different ethnic groups compared with White British children. We discuss the implications of our findings with respect to the current debates regarding the varied terminology for LI, including SLCN, and of a needs-based compared with diagnosis-based approach to assessing and making provision for children and young people with SENs.

Keywords: language impairment, ethnicity, English as an additional language, special educational needs, overrepresentation analysis, speech language and communication needs, needs-based assessment, diagnostic assessment

INTRODUCTION

Epidemiological studies of language impairment (LI) have reported high prevalence among children aged 5–6 years (Beitchman et al., 1986; Tomblin et al., 1997; Norbury et al., 2016). Follow-up studies of children with LI have shown that, as a group, they are at enhanced risk of a range of other developmental difficulties (Johnson et al., 1999, 2010). There is, however, a general consensus that children with LI are a heterogeneous group with respect to the language domain specifically, including level of severity, but also the overlap with speech problems. However, attempts to identify clinically distinct profiles of subgroups within the overall LI population have not been successful

(Tambyraja et al., 2015), and there are substantial debates about terminology (Reilly et al., 2014a).

The aim of this paper is to examine both prevalence and heterogeneity of the LI population in England by considering associations with age, severity of LI, and a range of demographic variables namely age, gender, ethnicity, and having English as an additional language (EAL). We then consider levels of disproportionality of being identified with LI for children from different minority ethnic groups relative to White British children. We discuss the results in the context of the debate on the usefulness of diagnosis compared with needs-based approaches to assessing and making provision for children with LI. Because the term “language impairment” has been used to refer to different groups of children with developmental language difficulties, we discuss the issue of terminology. To aid clarity, we use LI as a general term for developmental language difficulties but use other terms when discussing research that has favored these. In particular we use “speech, language, and communication needs” (SLCN) when reporting our study, as this is the special educational needs (SENs) category used by the UK Government’s Department for Education (DfE) for children and young people with LI (Department for Education and Skills, 2001; Department for Education and Department of Health, 2014).

This study was part of the Better Communication Research Programme (Dockrell et al., 2014), which was commissioned as part of the Better Communication Action Plan (Department for Children, Schools and Families 2008), the UK government’s response to the review of provision for children and young people in England with SLCN (Bercow, 2008), which had recommended a program of research “to enhance the evidence base and inform delivery of better outcomes for children and young people” (p. 50). The basis for the paper is an analysis of the SLCN data from the School Census conducted by the UK government on all children and young people in state schools in England (over 6 million students at each census), using data at four time points over 7 years.

Prevalence of Language Impairment

Language impairment is one of the most common types of SENs, as demonstrated by both epidemiological studies and examination of large-scale administrative data. For example, rates of LI among children in kindergarten (5–6 years) were reported as 12.6% by Beitchman et al. (1986) and 7.4% by Tomblin et al. (1997) in large-scale epidemiological studies in Canada and the US, respectively. The Dunedin study in New Zealand found a prevalence of 7.6% among 3-year-old children (Silva, 1980). The differences in rates reflect the age of children and range of LI examined, and the means of assessment. For example, Tomblin et al. identified children who met the clinical criteria for specific language impairment (SLI), whereas Beitchman et al. included a broader group; Silva examined 3-year-olds rather than children aged 5–6 years old, as did Stevenson and Richman (1976) in the UK; Norbury et al. (2016) examined 4- to 5-year-olds using teacher completed rating scales.

There is a strong gender effect with prevalence higher for boys than girls in all of these studies, for example, 8% boys, 6% girls in the Tomblin et al. (1997) sample, and this gender discrepancy

has been consistently found in other research (Conti-Ramsden and Botting, 1999; Dockrell and Lindsay, 2000) and in the national statistics collected through the School Census of all children in state-funded schools in England, by the DfE. LI is also more prevalent among children from more socially disadvantaged backgrounds (Department for Education, 2015). The relationship between LI and ethnicity or race is less well researched, but Strand and Lindsay (2009) report that Chinese, Bangladeshi, Black African, Black Caribbean, and Black other children were overrepresented for SLCN compared with White British children.

Language Impairment as a Risk Factor

Substantial research has demonstrated the persistence of language and communication difficulties throughout childhood and adolescence (Beitchman et al., 1994; Stothard et al., 1998) and into adulthood (Tomblin et al., 1992; Johnson et al., 2010; Beitchman et al., 2014). Other studies have demonstrated differential trajectories of children with different types of language and communication difficulties, whereby those children with impaired speech had a better prognosis than children with impaired language (Beitchman et al., 1996). LI is also related to a number of other developmental difficulties. Children with LI are likely to have poorer literacy, and this persists throughout childhood (Catts et al., 2002; Dockrell et al., 2007, 2014; Tambyraja et al., 2015; Pentimonti et al., 2016) and then into adolescence (Catts et al., 2002; Dockrell et al., 2009) and into adulthood (Johnson et al., 2010).

Language impairment is also associated with sociobehavioral difficulties as indicated by general or aggregated measures across domains, for example, the total difficulties score from the Strengths and Difficulties Questionnaire (Goodman, 1997) – see for example, Charman et al. (2015). In addition, more analytical studies have found differentiated risk relative to different aspects of sociobehavioural development. Recent evidence has shown that children with LI are at greater risk than typically developing children especially for academic self-concept, peer problems, and emotional difficulties, whereas conduct problems are less common, although still above the level for typically developing children (Lindsay et al., 2010b; Yew and O’Kearney, 2013, 2015; Charman et al., 2015). Furthermore, longitudinal studies have shown that these problems may persist over time (Lindsay et al., 2007; St Clair et al., 2011; Lindsay and Dockrell, 2012). Children with LI are also more likely than typically developing children to have attention problems (Karasinski, 2015) and hyperactivity when aged about 8–12 years, but not when they enter adolescence (Lindsay and Dockrell, 2012).

Given these adverse factors, it is not surprising that children with LI also have lower educational attainments across school subjects: at the end of reception class (Norbury et al., 2016) and at the transition from both primary to secondary school (from Key Stage 2 to Key Stage 3 in England), age 11 years (Durkin et al., 2014) and at the age of 16, the end of compulsory education in the UK (Conti-Ramsden et al., 2009; Dockrell et al., 2011). There are also associations between LI and the risk of maltreatment, encompassing both abuse (physical, sexual, and emotional) and neglect (physical or emotional), see Lum et al. (2015). Young

people with LI also become engaged with the criminal justice system more often than typically developing children. Bryan and colleagues argue that at least 60% of young people in the UK who are subject to the youth justice system have speech, language, and communication difficulties and, in their study of young people aged 11–17 years in a secure children's home, 30% had substantial language difficulties (Bryan et al., 2015).

Language Impairment: Variants and Terminology

The evidence for LI as a risk factor is substantial. However, research studies have varied in the nature of impairment studied. In particular, a major distinction has been between SLI and other forms of LI characterized by different overall profiles of abilities. Developmental difficulties with language may be distinguished by whether these present as a child's primary area of difficulty, and hence the main focus of need for intervention, or as secondary to a different primary area of difficulty. The first group has historically been referred to as having SLI. This categorization has been based on a discrepancy or exclusion model, namely where a child with an LI had general cognitive ability within the normal range; and in the absence of other identifiable reasons for LI. The model was based on "discrepancy" therefore as it required language to be significantly poorer than cognitive functioning; and "exclusionary" by identifying the child as having LI in the absence of other developmental difficulties that could impact adversely on language development, including sensory impairment [primarily hearing impairment (HI)], autism, and substantial lack of opportunity to develop language, typically by reason of socioeconomic disadvantage (Bishop, 2014).

The reasons for the use of SLI as a diagnostic category, both for research and practice, and the limitations of this approach have recently been critically reviewed by Bishop (2014) and Reilly et al. (2014b) in a special issue of the *International Journal of Language and Communication Disorders*, which also included responses from other experts and a joint paper setting out proposals for further developments (Reilly et al., 2014a). Together, these reviews present a substantial critique of the validity and usefulness of SLI as a diagnostic category, supporting the decision to exclude this category from the DSM-5, the latest revision of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2013); but, see also Rice (2016) for a contrary review supporting the usefulness of SLI as a diagnostic category.

The evidence from research has not supported the use of a discrepancy between verbal and non-verbal performance or the validity and usefulness of using exclusionary criteria, which were also found wanting. These criteria include social disadvantage, episodes of otitis media, anomalies of the oral structure and oral motor function, being bilingual, and autism spectrum disorders [ASD: see Bishop (2014)]. Similarly, Reilly et al. (2014b) argue for a lack of support for inclusionary criteria of biological (neural and genetic) markers, clinical behavioral markers, and differentiated profiles and outcomes of children with SLI compared to children with non-specific impairments. Furthermore, there is a lack of consistency in the use of different terms for children with language difficulties as used by practitioners and researchers (Dockrell et al., 2006). Bishop (2014) has explored this challenge

of multiple terms and, through a Google search, identified 130 terms being used for unexplained language difficulties.

In summary, there is substantial evidence that LI is a risk factor for educational and sociobehavioural development. However, there are variations in terminology and debates about the validity of proposed distinctions between subgroups of children with LI. These present challenges to both researchers and practitioners, and indeed to policy makers, and parents of the children concerned.

The Study

The Bercow review of services for children and young people with SLCN in England identified a number of limitations in provision of services for children and young people with SLCN (Bercow, 2008). Research conducted to inform the review revealed problems including identification of children with SLCN, assessment of their needs, and with making provision to meet the needs identified (Lindsay et al., 2010a). The UK government's action plan in response to the review provided funding for a research program, the Better Communication Research Programme (Department for Children, Schools and Families 2008). This was conducted by the research team but in conjunction with representatives from policy makers, commissioners of services, practitioners, and third sector organizations, including major charities for children and young people with SLCN and their parents, and a professional association (Royal College of Speech & Language Therapists). Hence, a research program was developed that addressed priorities of policy and practice, as well as research.

The aim of the present study was to examine the overall prevalence of children with SLCN, how these rates had changed over time, and the relationship with factors associated with the classification of children with SLCN: both child factors, namely age, gender, socioeconomic disadvantage, ethnicity, and having EAL; and contextual factors, namely the school and the local authority (LA).

MATERIALS AND METHODS

The data for this study were derived from the UK government's January School Census, a census of all students in state schools (primary and secondary, including special schools) in England, conducted by the UK government's DfE. The School Census data set comprises a range of student-level background characteristics including gender, month of birth, ethnicity, whether the student is eligible for free school meal (FSM), whether the student has EAL, and whether the student is classified as having a SEN.

The School Census for the period covered by this study recorded two measures of SEN: level and type. The SEN Code of Practice in force over this period recommended a graduated approach to addressing the needs of children and young people considered to require special educational provision (Department for Education and Skills, 2001). The first stage was at the discretion of the school, which identified the student and determined the type of provision from within the school's own resources (School Action). At the second stage (School Action Plus), the school drew upon the involvement of professionals external to the school, for example, an educational psychologist or speech and

language therapist, in order to access specialist expertise to assess and make provision to address the student's needs. Where this support was considered insufficient, the LA could be requested by the school (or parent) to carry out a statutory assessment under the Education Act 1996. This could lead to a statement of SEN for the child, which imposed a statutory duty on the LA and the school to meet the child's needs, as defined in the statement.

Type of SEN was recorded for students at School Action Plus or with a statement of SEN, according to 12 categories. For SLCN, identification would include a range of clinically and school ascertained needs and diagnoses relating to language and/or communication difficulties following assessments by a speech and language therapist, an educational psychologist, and the school's SENs coordinator. In recognition that a child may have more than one type of SEN, the School Census required that the primary need always be recorded and a secondary need, where applicable, may also be included. The present study focuses on students whose primary SEN was designated as SLCN at the level of School Action Plus or where the student had a statement: these are the two highest levels of need.

The Data

The data were made available by the DfE, which funded the study as part of its support for the Better Communication Research Programme. Before conducting the analyses, data were excluded for students in reception classes (those for children aged 4+ years in September who would have their fifth birthday during the course of the school year), as the census date (January) is only 4 months later: at this stage, relatively few children have an identified SEN. Data on students in post-compulsory education (aged 16–19 years) were also excluded. Many students leave school at 16 years of age, so the group that remains is consequently selective. As a result, this paper is based on the analysis of the total population of students in years 1–11 (Y1–Y11), aged 5–16 years, in England each January, approximately 6 million students at each census date. The main analyses are reported on the latest data (2011) alone, but data over the four census points (2005, 2007, 2009, and 2011) are used in order to examine trends.

Other variables collected included:

- Ethnic group: schools record the child's ethnicity in 1 of 18 main categories (the source is typically parents in primary schools but increasingly from the students themselves in secondary schools);
- Gender (boy = 1 vs. girl = 0);
- Age within year group (September–December = autumn born; January–April = spring born; May–August = summer born) with autumn born as the reference group;
- Year group (Y1–Y11);
- Entitlement to an FSM – this is a commonly used measure of poverty since only families largely dependent on state benefits are entitled to an FSM;
- Income Deprivation Affecting Children Index (IDACI) – this measures the proportion of children under the age of 16 in an area living in low-income households. The measure has a wide base including families in receipt of income support, job seekers allowance, and working families' tax credit/disabled

persons' tax credit, if below 60% of national median income. The indicator is available for very small localized areas called super output areas (SOA), of which there are 32,000 in England, each containing approximately 200 children (SD = 70). The variable is normalized to have a mean of 0 and SD of 1 with a higher score indicating higher deprivation;

- EAL – 0 where the students' first language was English and 1 otherwise.

Analysis

Odds Ratio Analysis

Because we are working with student-level data, we can use the odds ratio (OR) as the measure of disproportionality for SLCN. For ethnicity, the OR compares the odds of being identified with SEN for each minority ethnic group against the odds of being identified for SEN for the majority White British group. To calculate the ORs, we use a multinomial logistic regression model as this is an efficient means of comparing the prevalence of each SEN type against a reference group of students with no SEN within a single model (though only the results for SLCN are reported here). The alternative would require separate logistic regression models for each of the 12 primary SEN needs, which is inefficient. Use of a multinomial regression makes the assumption of independence of irrelevant alternative (IAA), namely that the probability of having a given SEN is not influenced by the other types of SEN included in the analysis, which is not an unrealistic assumption for these data.

Unadjusted and Adjusted Odds Ratios

In order to identify the association between ethnicity directly, and after adjusting for other factors such as year group, age, gender, socioeconomic disadvantage, and EAL, two nested models were run:

Unadjusted: the initial model included only ethnic group as an explanatory variable to assess the simple ORs for identification associated with each ethnic group, relative to the White British majority group.

Adjusted: a second model was created by adding year group, birth season, gender, entitlement to FSM, IDACI score, and EAL to determine how the ethnic group ORs changed after accounting for the associations with these other factors.

The OR indicates how much more (or less) likely an outcome is for one group rather than a comparator group, in this case White British students. The OR has advantages over simple percentage measures although the OR measure requires careful interpretation (Skiba et al., 2005; Strand and Lindsay, 2009). For example, there is no absolute level at which an OR may be considered significant in an educational sense. In the present study, with over 6 million students for each census, statistical significance is an unsatisfactory indicator of educational significance because almost any difference will be statistically significant as a result of the very large number of students. Furthermore, the present study comprises analyses of whole populations, not samples from which inferences about the population characteristics are drawn.

In the present study, we highlight results where the odds of being identified with SLCN for students in an ethnic minority group were 1.33 times higher than for White British students (a ratio of 1.33:1 or higher), or where the odds for the ethnic minority group were 0.75 times lower than for White British students (a ratio 0.75:1 or lower). These differ from Strand and Lindsay (2009) where we used cutoffs of 1.5:1 and 0.67:1 as we now consider that we set the bar very high and that these revised cutoffs are more reasonable indications of marked disproportionality, and hence educational significance [see also Skiba et al. (2004)].

Relative Risk Ratio Analysis

We also use the relative risk (RR) ratio to compare the extent of ethnic disproportionality between LAs. The RR ratio is the percentage of students from a minority ethnic group identified with SLCN in the LA divided by the percentage of White British students identified with SLCN in the LA. It is used to give an indication of disproportionality in SLCN at the LA level, though unadjusted for any of the demographic variables described above. The RR ratio is regularly used in studies of disproportionality in school boards and districts in the US [e.g., Bollmer et al. (2007)].

RESULTS

Prevalence of Speech, Language, and Communication Needs

National Prevalence

Speech, language, and communication needs comprised the third most prevalent type of SEN, with 15.7% of those with SEN having SLCN as their primary SEN at School Action Plus or above (Table 1). Only students with moderate learning difficulties (MLD: 24.3%) and behavioral, emotional, and social difficulties (BESD: 23.7%) were more prevalent. This indicates a prevalence of 1.6% of all students in Y1–Y11 with SLCN as their primary SEN. Furthermore, prevalence of students identified as

having SLCN as their primary SEN increased substantially over the period 2005–2011, from 0.94% in 2005 to 1.61% in 2011, an increase of 72% (Table 2).

In addition, 5.5% of students with a different primary need had SLCN as a secondary need. This was most frequently reported for students with severe learning difficulties (SLD: 13.3%), and those with ASD, HI, and physical disability (PD: each about 9%). The total prevalence of students with SLCN as their primary or secondary need was 2.2% of all students aged 5–16 (Y1–Y11), representing a total of 135,700 students among the 6.17 million students in the 2011 cohort of all students in English schools. As there are difficulties combining the data for primary and secondary needs, for example because it is unclear whether a secondary need should be equally weighted as compared with a primary need, only data from students with SLCN as their primary SEN will be included in subsequent analyses.

Prevalence by Age and Ethnicity

There was a strong relationship between prevalence of SLCN and age as indicated by year group. Students in Y1 are over four times more likely to be identified with SLCN than students in Y11 (the base group). The prevalence of students with SLCN and different ages varies by the severity of need, as shown by the cross-sectional analysis of the 2011 cohort in Figure 1. The prevalence of students with a statement is relatively consistent between Y1 and Y11, showing a shallow rise and then decline around a prevalence of about 0.4%. However, the data for students at School Action Plus indicate a steady decline in prevalence from a high point in Y1 (2.6%) declining to 0.6% at Y7 and to 0.3% by Y11.

White British students comprise 74.8% of the total school student population, with students from minority ethnic groups comprising the remaining 25.2% – see Table 3 for a breakdown of school population by ethnicity. Prevalence of SLCN varied

TABLE 1 | Students by type of primary need – 2011.

Primary need	<i>n</i>	% of all students	% of those with a primary need
No SEN	5,534,905	89.7	–
Moderate learning difficulty	153,787	2.5	24.3
Behavioral, emotional, and social difficulties	149,882	2.4	23.7
Speech, language, and communication needs	99,288	1.6	15.7
Specific learning difficulty	74,885	1.2	11.8
Autistic spectrum disorder	53,780	0.9	8.5
Other difficulty/disability	27,642	0.4	4.4
Physical disability	22,806	0.4	3.6
Severe learning difficulty	22,341	0.4	3.5
Hearing impairment	13,980	0.2	2.2
Visual impairment	7,557	0.1	1.2
Profound and multiple learning difficulties	6,994	0.1	1.1
Multi-sensory impairment	783	0.0	0.1
Total	6,168,630		633,725

TABLE 2 | Prevalence (% of all students aged 5–16) with an identified SLCN by ethnic group and year (2005–2011).

Ethnic group	2005	2007	2009	2011	% increase
White British	0.88	1.10	1.32	1.49	70
White Irish	0.93	1.12	1.13	1.40	52
Traveler Irish	1.81	1.98	2.62	3.27	81
Traveler Gypsy/Roma	1.70	2.26	2.43	2.93	72
White Other groups	1.19	1.56	1.66	1.86	56
Mixed White and African	1.04	1.13	1.83	1.95	89
Mixed White and Caribbean	0.91	1.41	1.41	1.69	86
Mixed White and Asian	0.98	1.13	1.35	1.45	48
Any other mixed background	1.08	1.37	1.62	1.83	69
Indian	0.70	0.89	1.09	1.27	80
Pakistani	1.13	1.38	1.70	1.81	61
Bangladeshi	1.41	1.80	2.19	2.38	69
Any Other Asian	1.13	1.26	1.46	1.67	48
Black African	1.69	2.03	2.32	2.65	57
Black Caribbean	1.45	1.85	2.36	2.53	75
Black Other groups	1.58	1.97	2.38	2.64	68
Chinese	1.81	1.81	1.99	2.19	21
Any other ethnic group	1.27	1.72	1.91	2.32	83
Unclassified/refused	0.98	1.19	1.36	1.51	53
All students	0.94	1.18	1.42	1.61	72

The data for traveler groups are not discussed in detail because of the very small numbers in these groups.

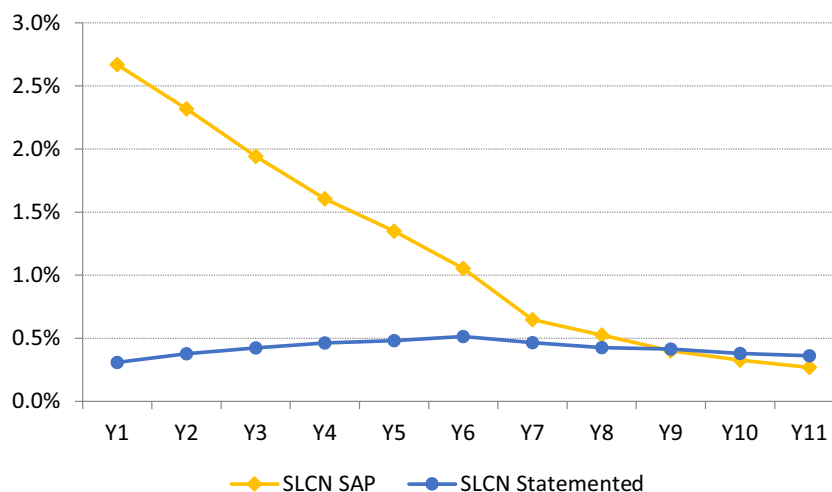


FIGURE 1 | Prevalence of children with speech, language, and communication needs across year groups – 2011. Note: SAP, School Action Plus; SLCN, speech, language, and communication needs.

TABLE 3 | Students by ethnic group – 2011.

Ethnic group	Number pupils aged 5–16	% of all pupils
White British	4,614,744	74.8
White Irish	19,942	0.3
Traveler Irish	4,218	0.1
Gypsy/Roma	12,815	0.2
White Other groups	235,929	3.8
Mixed White and African	29,114	0.5
Mixed White and Caribbean	81,540	1.3
Mixed White and Asian	55,566	0.9
Any other mixed background	91,869	1.5
Indian	150,597	2.4
Pakistani	228,044	3.7
Bangladeshi	94,147	1.5
Any Other Asian	83,503	1.4
Black African	184,055	3.0
Black Caribbean	85,531	1.4
Black Other groups	36,122	0.6
Chinese	22,090	0.4
Any other ethnic group	85,235	1.4
Unclassified	53,569	0.9
Total pupils	6,168,630	

greatly by ethnicity (Table 2). Taking the data from the final year of the study (2011), 1.49% of White British children had SLCN as their primary need, and 15 of the 18 minority ethnic groups had higher proportions, most notably Black African (2.65%), Black Caribbean (2.53%), Black Other (2.64%), and Bangladeshi (2.38%) groups. Even higher levels were found for the two Traveler groups, but these groups are relatively small in the population so their data should be treated with caution.

Comparison of the increase in prevalence of students with SLCN as their primary need over the 7-year period (2005–2011) also varied by ethnic group (Table 2). The increase in prevalence over the period was less marked among Chinese students (21%), although this group was greatly overrepresented: 2.19%

compared with 1.49% for White British students. Other groups, however, showed substantial changes in the percentage of children with SLCN; in particular six groups had increases of 80% or more over this period, with the Mixed White and African group showing an increase of 89% (Table 2). Consideration of the effects of gender and socioeconomic disadvantage will be considered in the next section.

Odd Ratios and Student Characteristics

The unadjusted ORs for SLCN by ethnic group for the four census points are reported in Table 4. In order to explore disproportionality in more detail, we examined the association between SLCN and ethnicity also taking into account year group, age, gender, socioeconomic disadvantage, and EAL by means of a multinomial regression analysis for the 2011 data. This analysis controls for all variables simultaneously so each coefficient represents the unique effect for that variable, after the variation in the outcome associated with all other explanatory variables in the model is controlled (Table 5).

Gender has the strongest association with SLCN identification, with boys 2.6 times more likely to be identified than girls. A strong social gradient for SLCN is also evident: the odds of identification for students entitled to FSM are 1.8 times higher than the odds for students not entitled to FSM, and a 1 SD change in IDACI is associated with increased odds of 1.3. Combining the estimates for FSM and IDACI in order to produce an estimate of the total impact of socioeconomic disadvantage shows that students entitled to FSM and living in a socioeconomically deprived area (+1 SD on the IDACI) are 2.3 times¹ more likely to

¹The combined effects are found by adding the β coefficients (not shown on the table) and taking the exponent. For SLCN, the FSM β coefficient is 0.61 and the IDACI β coefficient is 0.22, hence the combined effect is $\text{Exp}(0.83)$, equivalent to an OR of 2.3:1.

TABLE 4 | Unadjusted odds ratios for SLCN by ethnic group and year (2005–2011).

Ethnic group	SLCN			
	2005	2007	2009	2011
White Irish	0.98	1.03	0.86	0.94
Traveler Irish	3.11	2.28	2.56	2.76
Traveler Gypsy/Roma	2.92	2.48	2.21	2.23
White Other groups	1.45	1.40	1.24	1.22
Mixed White and African	1.23	1.05	1.39	1.31
Mixed White and Caribbean	1.07	1.29	1.11	1.17
Mixed White and Asian	1.08	1.01	1.00	0.95
Any other mixed	1.22	1.25	1.23	1.23
Indian	0.96	0.78	0.79	0.81
Pakistani	1.56	1.26	1.29	1.21
Bangladeshi	1.64	1.61	1.63	1.57
Any Other Asian	1.44	1.10	1.06	1.07
Black African	1.78	1.86	1.77	1.78
Black Caribbean	1.54	1.77	1.90	1.80
Black Other groups	1.64	1.86	1.89	1.83
Chinese	2.18	1.58	1.44	1.39
Any other ethnic group	1.59	1.54	1.43	1.54
Unclassified/refused	1.15	1.11	1.05	1.02

Odds ratios (OR) compare the identification rates for each ethnic group to the odds of identification for White British students. Red bold indicates overrepresentation (OR > 1.33). Each census includes all 6 million students aged 5–16 years in state-funded schools in England.

be identified with SLCN than those who are not so socioeconomically disadvantaged.

As reported above, there is a strong relationship between the prevalence of SLCN and year group. Students in Y1 are over four times more likely to be identified with SLCN than children in Y11 (the base group). Furthermore, there is a strong age effect within year group: students who are young for their year group (summer born) are 1.5 times more likely to be identified with SLCN than the older (autumn born) students, with spring born students 1.2 times more likely to be identified. EAL is only weakly associated with SLCN prevalence, after taking into account ethnicity, socioeconomic disadvantage, gender, and age, with just a small increase in the OR (OR = 1.09:1) for those identified as having EAL compared to students whose first language was recorded as English.

Controlling for the above variables substantially reduced the ethnic coefficients: Bangladeshi, Black African, and Black Other groups are no longer overrepresented; the only raised odds to remain are for Black Caribbean (although the OR reduced substantially from 1.80:1 to 1.29:1) and Chinese (1.39:1, which is reduced to 1.32:1) students.

School Characteristics

The large majority of students with SLCN at School Action Plus or with a statement were attending mainstream schools (96.2%) rather than special schools (3.8%). Furthermore, 85.4% of students with a statement were in mainstream schools, with just 14.6% attending special schools. To explore associations with school characteristics, over and above student factors, the student-level analysis was repeated adding selected school factors. This analysis was conducted for primary and secondary schools separately. Special schools were excluded as they cater

TABLE 5 | Student background and odds ratios for SLCN: age 5–16 (January 2011).

Variable	Value	Odds ratio	
Ethnic group	White Irish	0.90	
	Traveler Irish	1.58	
	Traveler Gypsy/Roma	1.52	
	White Other groups	0.97	
	Mixed White and African	0.94	
	Mixed White and Caribbean	0.88	
	Mixed White and Asian	0.80	
	Any other mixed background	0.95	
	Indian	<i>0.69</i>	
	Pakistani	0.81	
	Bangladeshi	0.91	
	Any Other Asian	0.85	
	Black African	1.06	
	Black Caribbean	1.29	
Socioeconomic disadvantage	Black Other groups	1.17	
	Chinese	1.32	
	Any other ethnic group	0.99	
	Unclassified/refused	1.01	
	FSM	1.84	
	Neighborhood IDACI	1.25	
	Combined FSM and IDACI	2.30	
	Gender	Boy	2.55
	Birth season	Summer	1.46
		Spring	1.20
Year group	Y1	4.22	
	Y2	3.92	
	Y3	3.49	
	Y4	3.10	
	Y5	2.79	
	Y6	2.42	
	Y7	1.71	
	Y8	1.47	
	Y9	1.27	
	Y10	1.11	
EAL	EAL	1.09	

Multi-normal logistic model base = No SEN. SEN type is the primary need recorded for all School Action Plus and statemented students. EAL, English as an additional language; FSM, entitled to free school meal; IDACI, Income Deprivation Affecting Children Index. Outcome is School Action Plus and statemented combined. Red bold indicates overrepresentation (OR > 1.33). Blue italic indicates underrepresentation (OR < 0.75).

specifically for students with substantial SEN, and small schools (<20 students) were also excluded as percentage figures for school composition are likely to be very unreliable.

For primary schools, the proportion of students entitled to FSM was a significant predictor of prevalence of SLCN, over and above the FSM entitlement and IDACI score of individual students (Table 6). Students in primary schools in the lowest %FSM quintile were about half as likely to be identified as students in schools in the top %FSM quintile, with a clear graduation across quintiles. However, there was a much weaker association with %FSM for secondary schools. School size was associated with higher levels of identification of SLCN in small schools and was consistent across both primary and secondary phases. Voluntary aided/controlled primary schools (faith schools where the religious authority had a higher level of influence and control of the school than in other state schools) had low levels of identification; there was no association with school type for secondary schools.

TABLE 6 | School characteristics and their associations (odds ratios) with SEN identification 2011.

Variable	Value	SLCN
Primary schools		
School type	Voluntary	0.91*
	Foundation	1.03
	Academies	0.97
	Community	
School %FSM (quintiles)	Very low	0.56*
	Low	0.65*
	Average	0.79*
	High	0.91*
	Very high	
School size (quintiles)	Very small	1.30*
	Small	1.10*
	Average	1.08*
	Large	1.03*
	Very large	
School %EAL	1 SD change	1.06*
School %WBRI	1 SD change	1.00
Secondary schools		
School type	Voluntary	0.97
	Foundation	0.98
	Academies	1.00
	Community	
School %FSM	Very low	0.92
	Low	0.93
	Average	0.95
	High	0.93*
	Very high	
School size	Very small	1.12*
	Small	1.06*
	Average	1.06*
	Large	0.96
	Very large	
School %WBRI	1 SD change	0.90*
School %EAL	1 SD change	1.06*
School gender	Boys	0.97
	Girls	1.12*
	Mixed	
Selective status	Grammar	0.10*
	Modern	1.40*
	Comprehensive	

The model also controls for the all student-level measures shown in Table 5, but the coefficients are not reported here. The omitted category is the reference group. EAL was not included in the analysis. EAL, English as an additional language; FSM, entitled to free school meal; WBRI, White British.

*Statistically significant contrasts at $p < 0.05$.

The odds of being identified with SLCN were higher in schools with a higher proportion of ethnic minority students (a 1 SD increase in the percentage of White British students was associated with a 0.90 reduction in the odds for SLCN identification in secondary schools) even after control for all the pupil level measures. Although girls were less likely to be identified with SLCN than boys, SLCN identification rates were higher in girls-only schools than in mixed schools (OR = 1.12) perhaps reflecting the higher proportion of ethnic minority students educated in single-sex schools [3% of White British girls but 18% of Black girls (Strand, 2007)]. Selective school status was very strongly associated with SLCN identification with much lower levels in grammar schools that admit students of

higher ability (OR = 0.10) and higher levels of identification in secondary modern schools that take the students of lower ability (OR = 1.40) compared to comprehensive schools.

Regarding ethnic disproportionality, the patterns were largely consistent across both phases: although this is more marked in secondary and is not eliminated by the controls for student background (Table 7). Regarding the three Black groups, greater disproportionality (overrepresentation) in the secondary phase was reduced but was generally not eliminated by controls for student background: for example, from an OR of 2.13 to 1.65 for Black Caribbean students. Bangladeshi students were also overrepresented in both phases, but this can be accounted for by student background with the raw OR reduced from 1.41 to 0.95 (adjusted) in primary and from 1.77 to 1.13 (adjusted) in secondary schools, both adjusted ORs thereby being lower than our cutoff of 1.33. However, children of Indian heritage were underrepresented at primary school when student background is taken into account (OR = 0.73) and at secondary school only when both student background and EAL are taken into account (OR = 0.67). White Other students were overrepresented in the secondary (OR = 1.40) but not the primary phase (OR = 0.94).

These results are not contradictory to the result reported above and in Table 5, where we noted that the ethnic coefficient was substantially reduced when we controlled for the whole age range (Y1–Y11). The main analysis (Table 5) is for the whole 5–16 years range. It controls for age within year (birth season) and year group but is still for all cases across the entire aged 5–16 range. We subsequently find that this obscures somewhat greater disproportionality if the data are parsed separately for secondary age (Y7–Y11) compared to primary age (Y1–Y6) (shown in Table 7). This may be related to the higher SLCN prevalence rate in primary (as shown in Figure 1), so that disproportionality may be lower in the early years when more students are identified. However, the ORs are in the same direction in both phases, so we do not wish to overemphasize this result.

Local Authority Variation in Disproportionality

Table 8 presents the RR rates for the 10 LAs with the lowest and the 10 LAs with the highest disproportionality for Black students (i.e., Black African, Black Caribbean, and Black Other) with SLCN, for the 135 of 152 LAs in England with a minimum of 60 Black students in the Y1–Y11 population. The range of disproportionality is substantial ranging from four LAs where no Black students were identified with SLCN, to overrepresentation of Black students 3:1 relative to White British students. Overall, there was substantial diversity across LAs, with 36 LAs showing substantial underrepresentation of Black students (RR < 0.75) and 56 LAs showing substantial overrepresentation (RR > 1.33).

Although the absolute level of SLCN identification is correlated with socioeconomic disadvantage (for example, LA level correlations with %FSM and mean IDACI scores were 0.51 and 0.50, respectively), socioeconomic disadvantage is not strongly correlated with disproportionality (LA level correlations with

TABLE 7 | Odds ratios for ethnic group by phase for SLCN – 2011.

	Primary schools			Secondary schools		
	Raw	Adjusted	Adjusted incl. EAL	Raw	Adjusted	Adjusted incl. EAL
White Other groups	1.05	0.94	0.90	1.59	1.40	1.21
Indian	0.76	<i>0.73</i>	<i>0.70</i>	0.85	0.79	<i>0.67</i>
Pakistani	1.09	0.86	0.82	1.29	0.95	0.80
Bangladeshi	1.41	0.95	0.91	1.77	1.13	0.94
Any Other Asian	0.98	0.87	0.83	1.22	1.06	0.90
Black African	1.67	1.11	1.06	1.81	1.23	1.07
Black Caribbean	1.68	1.20	1.20	2.13	1.65	1.63
Black Other groups	1.61	1.12	1.10	2.18	1.60	1.49
Chinese	1.30	1.31	1.25	1.71	1.73	1.47
EAL			1.05			1.24

Odds ratios compare the identification rates for each ethnic group to the odds of identification for White British students. Red bold indicates overrepresentation (OR > 1.33). Blue italic indicates underrepresentation (OR < 0.75).

TABLE 8 | Disproportionality for Black students with SLCN by local authority.

Rank	Local authority	All students (%)	White British		Black ^a		Relative risk
			N	%	N	%	
1	Gateshead	1.4	20,603	1.4	161	0.0	0.00
2	York	0.9	17,389	0.9	85	0.0	0.00
3	Poole	1.7	14,040	1.7	65	0.0	0.00
4	Somerset	1.1	55,211	1.1	102	0.0	0.00
5	Kingston upon Hull, City of	1.9	25,425	2.0	298	0.3	0.17
6	Central Bedfordshire	0.9	27,539	0.8	530	0.2	0.22
7	Windsor and Maidenhead	1.9	11,448	1.7	227	0.4	0.25
8	West Berkshire	1.2	17,684	1.1	254	0.4	0.35
9	Plymouth	2.3	27,320	2.4	207	1.0	0.40
10	Walsall	0.6	25,114	0.7	1,018	0.3	0.44
126	Bromley	1.6	26,755	1.4	3,075	2.8	2.02
127	Tameside	0.7	24,075	0.7	281	1.4	2.12
128	Cumbria	1.3	55,221	1.3	70	2.9	2.19
129	Bath and North East Somerset	1.6	18,495	1.5	143	3.5	2.30
130	Haringey	3.1	5,247	1.8	8,609	4.1	2.31
131	Barnsley	1.4	25,559	1.4	120	3.3	2.39
132	Durham	2.7	55,920	2.7	75	6.7	2.48
133	North Tyneside	2.4	21,775	2.3	103	5.8	2.51
134	Telford and Wrekin	1.5	19,036	1.4	291	4.1	2.89
135	Wigan	0.9	36,991	0.8	235	2.6	3.02
	Total	1.6	4,614,744	1.5	305,708	2.6	1.76

^aBlack includes Black Caribbean, Black African, and Black Other groups.

%FSM and mean IDACI score of $r = 0.17$ and $r = 0.10$, respectively). Furthermore, whereas the proportion of Black students in the LA population is strongly correlated with the overall level of SLCN identification ($r = 0.67$), there is only a very weak relationship with disproportionately ($r = 0.15$).

DISCUSSION

In this paper, we have examined the factors associated with identification as having SLCN, the category used for LI in the School Census of children and young people attending state-funded schools in England. We now discuss our findings regarding prevalence and disproportionality, and the factors that affect these, and then consider their implications for policy, practice, and research, including needs compared

with diagnosis-based methods of identification, assessment, and provision.

Prevalence

The prevalence of children identified as having SLCN in England rose steadily over the period covered by our analysis, 2005–2011, rising to 1.61% of all school students having SLCN as their primary SEN: 15.7% of children with SEN. This represents an increase in prevalence of 72% over this period. A further 5.5% of children had SLCN associated with a different primary need, resulting in overall prevalence of 2.2% of all school students. Although substantial, this prevalence is substantially lower than that found from epidemiological studies of children at 3–6 years of age (Stevenson and Richman, 1976; Silva, 1980; Beitchman et al., 1986; Tomblin et al., 1997). This discrepancy is partially explained

by the different samples of children and measures included in the studies. Also, of significance, however, is the substantial age gradient found in the present study from age 5 to 16 years and its interaction with severity.

Although prevalence of children with the most severe SLCN as their primary need remains relatively constant from Year 1, about 5 years old, to Year 11, about 16 years old, the prevalence of children with lower levels of need (School Action Plus) reduces substantially over the period Year 1 to Year 6 and then more slowly over the period to Year 11. This indicates two distinct trajectories over chronological age, related to severity of language difficulties, with relative improvement in a substantial proportion of children with lower severity levels of language difficulties over the period. Previous research on remission of language difficulties in early childhood has reported a similar trend (Stothard et al., 1998). Furthermore, our study has shown that there is also a substantial association between identification as having SLCN and age within year group. This is supported by a recent study of children in reception classes (the year before Year 1), in one English county, which found a highly significant relationship between teacher-rated language difficulties and age within this year group of 4- to 5-year-old children (Norbury et al., 2016).

We propose that the high level of identified SLCN in the early years of schooling in England is related to the attribution of children having SEN rather than age appropriate development. We suggest that this is a result of the difficulties faced by teachers in providing curriculum targets and pedagogy, which are developmental age appropriate for the children. As a result, teachers seek external support to meet the needs of these children, leading to the children's categorization as having SEN, in the form of SLCN. This is compounded by the national assessment undertaken by children at the end of the reception year, the Early Years Foundation Stage Profile (Department for Education, 2011): this is a high stakes measure of students' achievement that is used as an accountability measure of schools. Our finding that summer born children are about 50% more likely to be identified as having SLCN, and spring born children are 20% more likely to be identified, compared with older autumn born children, suggests that teachers are very poor at making appropriate age adjustments. As those children with early SLCN identification mature and move through the year groups many will improve their language abilities relative to their peers, resulting in the reduction of children identified as having SLCN at School Action Plus, comparable to a trend identified in earlier work, which identified that children with EAL made significantly greater progress between the age of 4 and 7 years (Strand, 1999).

The picture regarding prevalence of SLCN is more complex, however, as our study indicates other important associations. Boys were 2.6 times more likely to be identified with SLCN than girls, indicating the strong gender discrepancy found consistently in epidemiological studies of children at 3–6 years of age, which remains as those samples were followed up (Beitchman et al., 1986; Tomblin et al., 2003). There was also a significant relationship between SLCN and social disadvantage: children with high socioeconomic disadvantage were 2.30 times more likely to have SLCN than children with low levels of socioeconomic disadvantage. This social gradient of SLCN is well established and is not

unique to SLCN: other research has indicated a strong association with, for example, MLD and BESD (Strand and Lindsay, 2009).

There has been little previous research on the relationship between developmental language difficulties and ethnicity (Tomblin et al., 1997). This may in part be due to the substantial interest in children whose first language is different from the host culture, having EAL in the UK context, or more generally described as English Language Learners (ELL). Our study has shown that SLCN prevalence varies relative to ethnicity. For example, with respect to our 2011 data, the prevalence of SLCN over the period was highest among the Bangladeshi (2.38%) and the three Black groups (about 2.6%) compared to 1.49% of White British children. Furthermore, absolute prevalence for all ethnic groups increased over the period 2005–2011, but rates of increase varied greatly: that for Chinese children showed the lowest rise (21%) whereas there were substantially higher rates of 89% for the Mixed White and African group and 86% for the Mixed White and Caribbean group. Also of note is that having EAL became non-significant when our model was adjusted for ethnicity, social disadvantage, and other factors.

Ethnic Disproportionality

Our findings indicate the importance of not only examining absolute levels of prevalence but also the relationship between these for different minority ethnic groups compared with the majority ethnic group, in the present case White British. This issue of disproportionality for children with developmental language difficulties has received relatively little research attention. Research has focused particularly on disproportionality of black children in the US (African American) and the UK (Black Caribbean) and their identification as having intellectual difficulties or BESD (Strand and Lindsay, 2009). Ethnic disproportionality in special education, particularly the overrepresentation of black students, and especially males, has been a highly contentious topic for many years, particularly in the US (Skiba et al., 2004). Our paper extends examination of this topic by examining not only the relationship between SLCN and ethnicity but also taking into account other factors such as socioeconomic disadvantage.

We have demonstrated a strong overrepresentation for SLCN for most ethnic groups, compared to White British children, which generally persists over time. ORs for the 2011 census showed 8 of the 18 ethnic groups were overrepresented for SLCN, using our cutoff of $OR > 1.33$. As well as the three Black groups, Bangladeshi and Chinese students were also overrepresented, although when adjusted for socioeconomic disadvantage and other factors, these ORs reduced substantially. The Indian group was underrepresented for SLCN in both unadjusted and adjusted analyses ($OR = 0.81$ and $OR = 0.69$ in the unadjusted and adjusted analyses, respectively).

Examination of trends over time indicates that the higher relative prevalence of SLCN for Pakistani students reduced substantially after 2005 and was non-significant in subsequent years: from $OR = 1.56$ in 2005 to $OR = 1.21$ in 2011 (Table 4). The ORs also reduced for Chinese, the Any Other Asian, and the White Other groups. There is consistent overrepresentation, across all years, for Bangladeshi, Black African, Black Other, and Chinese groups compared with White British students. This overrepresentation

is substantial. For example, in 2011 the odds for Black Caribbean students being identified with SLCN were 1.80 times (or 80%) greater than the odds for White British students. Similar levels of overrepresentation are apparent for Black African (OR = 1.78:1) and Black Other groups (OR = 1.83:1). These findings suggest that not only changes in policies and practices have occurred at local level but also that these have not been consistent across different ethnic groups.

Context

A number of significant relationships were found between the prevalence of SLCN and school characteristics, after controlling for all pupil level measures. For primary schools, higher levels of SLCN were associated with schools having students with higher levels of social disadvantage (FSM eligibility for students), having fewer students on roll, and having a lower proportion of White British pupils, while faith schools had slightly lower than expected levels of children with SLCN. Associations for secondary schools were similar with lower risks in schools that were small, with lower levels of socioeconomic disadvantage, with low proportions of ethnic minority students or with selective intakes (grammar schools). Associations with ethnicity were also somewhat stronger with secondary than within primary schools, both before and after adjusting for pupil background.

The findings from LAs were more striking, revealing substantial variation across the country in terms of ethnic disproportionality for SLCN, both underrepresentation and overrepresentation, which was not accounted for by level of socioeconomic disadvantage within the LA. Variation has previously been shown in LA provision (Lindsay et al., 2005) and achievement levels of students with SLCN (Lindsay, 2011). LA variation in disproportionality for SEN identification has also been found. For example, Pakistani pupils in 10 LAs were half as likely as White British pupils to have an SEN (OR < 0.50:1), whereas in 4 LAs Pakistani pupils were 1.5 times more likely than White British pupils to have an identified SEN (OR > 1.5:1), see Lindsay et al. (2006).

These findings for schools and LAs are important as each is involved in the identification, assessment, and making of provision to meet the needs of students with SEN, including those with SLCN. There is a mixed picture for primary and secondary schools, but in both cases, prevalence of SLCN was associated with school and LA factors. These findings indicate that schools' and LAs' characteristics have an influence in the identification of SLCN and hence the prevalence derived. These results suggest that teacher judgment and school processes are also important. Teacher judgments of ability setting/tracking in England have been shown to systematically relate to student characteristics including ethnicity (Strand, 2012), and the association of school factors with both student attainment and behavior is well established (Strand, 1998, 1999). Our findings suggest that the identification of students with SLCN is also related not only to the nature of the students' characteristics but also the policies and systems within LAs and schools that support the identification of children with SLCN. The findings provide support to previous research that has examined the influence of schools as organizations in the identification and development of students with SEN (Lunt and Norwich, 1999; Norwich, 2008).

Identification, Action, and Meeting Children's Needs

Our study has demonstrated clearly that identification of children having SEN with SLCN as their primary need is far from straightforward. The model of diagnostic approaches to identification and assessment is based on there being clear criteria for inclusion and exclusion, to ensure high levels of true positives and true negatives (hits). Whereas this is highly likely to be achieved with certain conditions, this is often difficult with psychoeducational concerns. For example, the diagnosis of SLI compared with other types of LI has been shown to be of questionable validity (Bishop, 2014; Reilly et al., 2014a,b). This matters as optimal actions may occur only if the proportions of false positives and false negatives (misses) are very low and the proportions of hits are very high, and that there is a well evidenced intervention for the diagnosed conditions.

With respect to SLCN however, we have shown that identification, and hence prevalence, is affected by a range of factors, both developmental (within children) and contextual (external to the child). These interact and furthermore, their interaction then may vary over time (Lindsay and Wedell, 1982). Consequently, the rationale for diagnosis-based methods of identification of SLCN is questionable. Our preference is for needs-based approaches (Dockrell et al., 2015). These identify a constellation of within child and contextual factors that contribute to the identifications of the child's needs, indicating their SEN. It is not only useful to identify the child's primary need as a marker or signpost but also important to recognize the range of other factors to address.

In addition, our study has provided directions for policy development, which have been taken up by the Department for Education and the Voluntary and Community Sector following the completion of the Better Communication Research Programme (Strand and Lindsay, 2012). For example, schools and LAs, and other commissioners of services must recognize the complexity of SLCN and the consequent need for more granular analysis, designed for developing, commissioning, and implementing services (Dockrell et al., 2015). This study also contributes to the current attempts to achieve a consensus on terminology, providing evidence concerning the previously under researched relationship between developmental language difficulties and ethnicity.

Limitations

The present study comprised the analysis of data on all children in England attending state schools aged 5–16 years with SLCN as their primary SEN. Most analyses were conducted on one cross-sectional cohort, with trend analyses drawing on data at four time points over a period of 7 years. These national datasets provide a unique perspective on the prevalence of children and young people with LI. However, our research is cross-sectional not longitudinal. Further research is required into patterns of relationships between the category and severity of SEN relative to age to identify the extent to which SLCN is different from other SEN categories.

A second limitation of the study is that the DfE data derive from the category "speech, language, and communication needs." Although this is essentially a category of children with LI, it will also include some children whose main problem concerns only

speech difficulties – many children have speech as well as language difficulties. This limitation, however, is relatively minor as children with speech difficulties without accompanying language difficulties comprise a small percentage. Furthermore, as we have shown, there is substantial debate about appropriate terminology; attempts to address this issue and achieve a consensus are now underway (Bishop et al., 2016).

CONCLUSION

The present study provides evidence from an analysis of the total state school population of England, using data derived from the School Census at four time points over a period of 7 years. Using the School Census category of SLCN, we have demonstrated that prevalence is strongly associated with several factors, namely gender, age, socioeconomic disadvantage, and ethnicity, and also with the practices of schools and LAs. Our findings support the critiques of the varied terminology for children with LI and expand the evidence base of the complexity of interacting factors relating to the nature of LI. With respect to policy and practice, our study provides support for the importance of focusing on the assessment of a broad range of within-child and contextual factors, and hence the identification of children's needs rather than diagnostic category, when determining the provision needed to support children with LI to progress optimally.

Our study extends the research on ethnic disproportionality for SEN. This is an issue with direct bearing on matters of social

justice as well as education. The pattern of identification of SLCN indicates overrepresentation of different minority ethnic groups and also both overrepresentation and underrepresentation with respect to LAs. Our study cannot give direct evidence on the reasons for these phenomena. Combined (mixed) methods' studies are necessary to go beyond the quantitative data (Lindsay et al., 2006) to explore the reasons why. Overall, our findings provide indications to national and local government, commissioners, and schools of the range of factors to take into account in developing both policy and practice with respect to children with LI, and the importance of monitoring the practical implementation of policies to ensure that they are evidence-based and non-discriminatory.

AUTHOR CONTRIBUTIONS

GL led the Better Communication Research Programme, which included the study, and led the writing of the paper. SS led the analysis of the data and was the joint author of the paper.

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