Review Article

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Reviewing the link between language abilities and peer relations in children with developmental language disorder: The importance of children's own perspectives

Lenka Janik Blaskova and Jenny L Gibson
Play & Communication Lab, Centre for Research on Play in Education, Development and Learning, University of Cambridge, Cambridge, UK

Abstract

Background and aims: Children with developmental language disorder (DLD) are at risk of difficulties in their friendships and peer relations. The present review explores how research directly involving children with DLD can inform our understanding of peer relations in this group, and how research insights may change according to the nature of their involvement in the studies. We further examine how these findings might shape current theoretical understandings of the links between language impairment and peer relations.

Methods: An integrative review methodology was used in order to identify relevant studies and synthesise the findings. A structured database search was carried out using the qualitative PICo framework; Population = 4–12-year-old children with DLD, phenomenon of Interest = peer relations, Context = research studies directly including children. After screening, 52 studies were included in a narrative research synthesis.

Main contribution: We identified six main types of study that directly included children with DLD; interview, sociometric, self-report, task-based, naturalistic observation and staged observation. Interview-based studies were the most likely to use a meaningful participatory approach. Indications of good practices for participation included reporting on involvement practices, seeking child assent, adapting materials and language used, using visual supports, using child-preferred communication methods and using art-based approaches. Findings from the narrative synthesis of studies highlight the importance of friendships to quality of life, and the role of pragmatic language skills and self-perceptions in building friendships.

Conclusions: Research on the peer relations of children with DLD is in the early stages when it comes to taking a participatory approach, however there are some examples of inclusive practice from which the whole field can learn. The findings show that research that directly includes children with language disorders and takes account of their communication challenges can help build a more comprehensive knowledge of their world and leads to interesting avenues for interventions targeting social adjustment.

Implications: Clinical implications are discussed with reference to the highlighted pragmatic language and social needs of children with DLD, which are typically not addressed unless disproportionately affected in comparison to structural language impairments.

Keywords

Developmental language disorder, participatory research, peer relations, child voice

Corresponding author:
Jenny L Gibson, Faculty of Education, University of Cambridge, 184 Hills Road, Cambridge CB2 8PQ.
Email: jlg53@cam.ac.uk

Introduction

Developmental language disorder (DLD) is a common neurodevelopmental condition characterised by persistent language difficulties that have an impact on everyday life, and which are not explained by concomitant conditions such as autism or sensory disabilities (Bishop et al., 2016; Norbury et al., 2016). Children with DLD are at higher relative risk of poor mental health outcomes when compared to children with typical language development (Conti-Ramsden & Botting, 2008; Yew & O'Kearney, 2013). Peer relations and friendships represent one of the most vulnerable areas of their functioning (Conti-Ramsden et al., 2013; Lloyd-Esenkaya et al., 2020; St Clair et al., 2011). In comparison to their typically developing (TD) peers, children with DLD are less popular and report having low quality friendships in adolescence (Durkin & Conti-Ramsden, 2007; Fujiki et al., 1999; Laws et al., 2012).

The social adaptation model (SAM) proposed by Redmond and Rice (1998) suggests these social challenges arise because the poor language abilities of children with DLD bias peers against them and also restrict them from fully participating in social interactions, further decreasing opportunities to improve communication skills (Redmond & Rice, 1998; Rice, 1993). Recent research evidence suggests that it is this increase in peer problems that underpins the elevated mental health risks in children with DLD (Forrest et al., 2021). Furthermore, stakeholder consultation has highlighted social outcomes and social inclusion as clinical research priorities (The Royal College of Speech and Language Therapists, 2020). Therefore, it is essential that researchers and clinicians have a good understanding of peer relations in this population so that effective supports can be developed.

The present paper aims to summarise the literature on peer relations[1] in children with DLD in a way that centres the children themselves. In doing so we hope to provide new insights and understanding of this important topic. We focus on clinically identified samples in order to draw insights of relevance to clinical practice. We aim to summarise research that uses a participatory approach. Inspired by the metaphoric Ladder of Citizen's Participation (Arnstein, 1969) and its adaptation, the Ladder of Children's Participation (Hart, 1992), in the present paper we consider child-centred methods used to elicit children's voice (see Figure 1).

We consider research that directly involves children with DLD to increase the likelihood of producing findings relevant to their everyday lives. In order to understand the peer relations of children with DLD, consulting children directly is of the utmost ethical importance (Lyons & McAllister, 2019; Merrick, 2014). Such an approach may help to capture what is most important to children, without introducing high levels of adult bias (Hardman, 1974; James & Prout, 1989), and may help shed a unique light on some of the underspecified aspects of the models used to study the phenomena.

Of course, this brings its own challenges; children may not be mature enough to self-reflect or have limited insights. Adult views can be helpful too, especially, when they observe children in many contexts and may act as advocates. Nevertheless, children's participation is a fundamental human right, especially protected for those with disabilities (Groundwater-Smith et al., 2015; UN General Assembly, 1989; UNESCO, 1994), and participatory approaches are increasingly advocated for in research on neurodevelopmental conditions like autism and DLD (Lyons & Roulstone, 2017; Pellicano & Stears, 2011; The Royal College of Speech and Language Therapists, 2020).

The understanding that children, including those with disabilities, are competent in expressing their views has been translated into empirical research (e.g. Jenkin et al., 2015). In education, the unique insights and experiences of children with special education needs, including, learning difficulties, autism, cerebral palsy and Down's syndrome have actively contributed to improved inclusive education settings (Cakir & Korkmaz, 2019; Goodall, 2019; Lewis et al., 2007; Porter & Lacey, 2005). Participatory studies with children with DLD revealed children's perceptions of themselves, their skills and quality of life (Markham et al., 2009; Merrick & Roulstone, 2011). In these studies, researchers used drawings, photographs, scrapbooks and picture-card games to set a less verbal-focused atmosphere during interviews. Eliminating further barriers, especially the child participant – adult researcher power imbalance, is fundamental for establishing supportive and engaging research relationships. Various guidelines provide recommendations for good practice in research with vulnerable children, for example, by encouraging researchers to continue confirming participants' assent throughout the study, to build relationships with participants over time, to make questioning styles appropriate, or to consider using cue cards to support participants' narratives (e.g. Lewis & Porter, 2004). Furthermore, scholars (e.g. Aldridge, 2015; Janik Blaskova et al., 2020; Merrick, 2014) share additional practical learnings from engaging with children in studies, demonstrating that children, including those with DLD, can actively participate in research and make their views known.

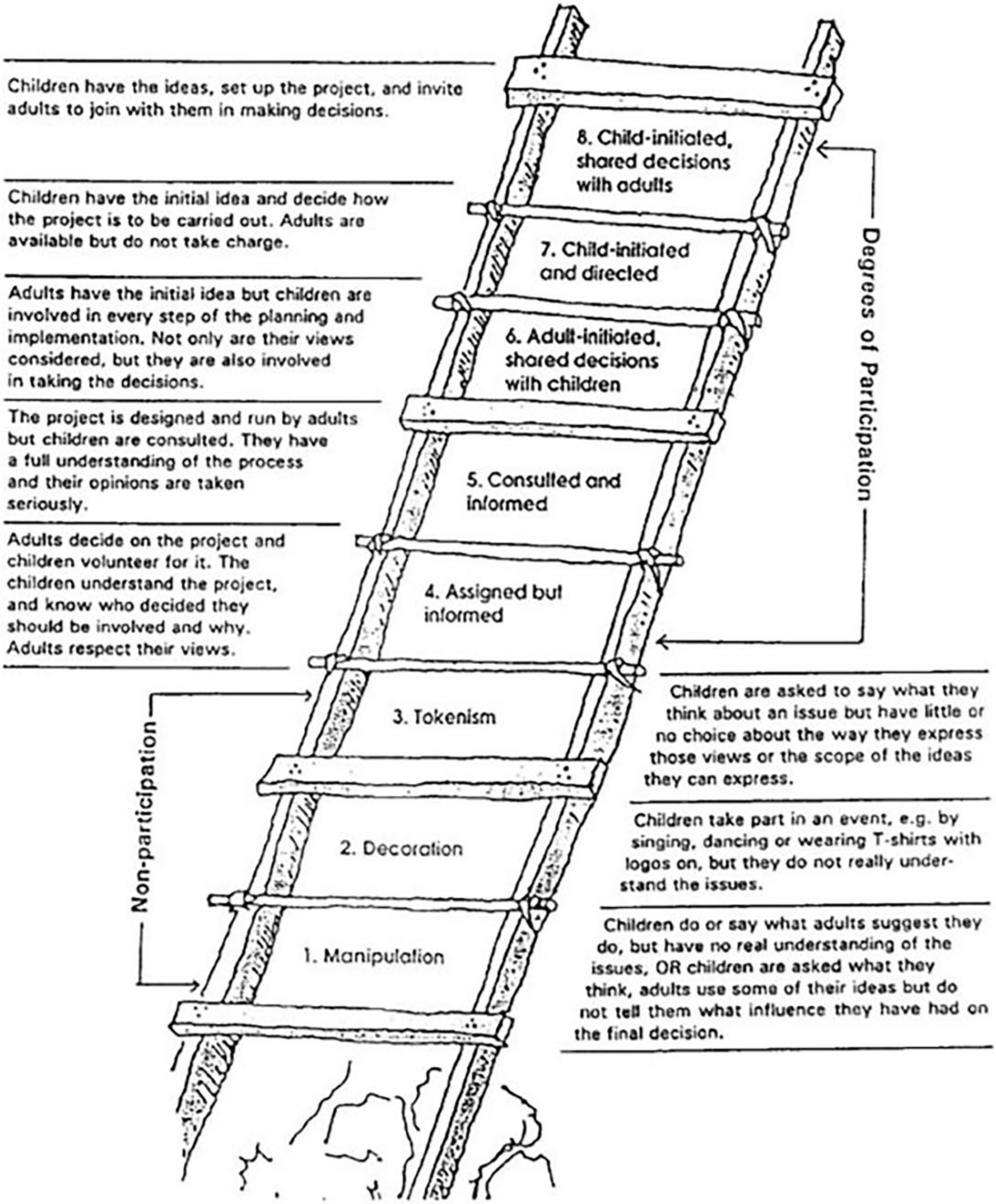

Figure 1. Ladder of children's participation (Hart, 1992, p.25).

The present study

This review aims to explore how research directly involving children with DLD can inform our understanding of peer relations in this group, and how research insights may change according to the nature of their involvement in the studies. We further examine how these findings might shape current theoretical understandings of the links between language impairment and peer relations, using the SAM as a framework to do so.

We address the following research questions:

1. To what extent have existing studies used genuinely participatory methods when researching the peer relations of children with DLD?
2. What examples of good practice in participatory research can be found in the research literature on DLD and peer relations?
3. Do different insights arise from different methods of child involvement in research, when considering links between language and peer relations in children with DLD *within the SAM framework*?

Addressing these questions will enable us to appraise to what extent the field of DLD research is meeting its obligations to conduct genuinely participatory research with those affected by the condition, and to further understanding of whether priorities and concerns raised in more traditional research paradigms align with those raised by more participatory designs.

Methods

Community engagement and ethics

Participants with DLD were not directly involved in carrying out this review however the topic of friendships and focus on participatory methods came about after discussions about research priorities with children (aged 6–11years), teachers and speech language therapists at a local language unit, and with parents at an open day.

Institutional ethical review and approval was granted for this study as part of the first author's doctoral studies.

Review methodology

To address the research questions, we carried out an integrative review of qualitative, quantitative and mixed methods studies to include all types of peer relations studies with children with DLD (Evans, 2007; Grant & Booth, 2009). Omitting the quality assessment step, we followed a systematized review approach, adopting the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Grant & Booth, 2009). We applied the following methods:

Search terms

Non-peer reviewed publications (books, doctoral theses, government reports) and peer-reviewed articles were collected using a combination of literature search strategies, including database searches of terms and citations of Redmond and Rice (1998) in Scopus. The qualitative 'PICo' Framework (Stern et al., 2014) was used to identify keywords for the search; **P**opulation = Children with Developmental language Disorder, phenomenon of **I**nterest = peer relations, **Co**ntext = research studies directly including children (See supplementary material for search terms).

Database searches

The search terms were used to search the following databases in April and May 2020:

- British Education Index
- Child Development & Adolescent Studies
- APA PsychInfo
- ERIC
- PubMed
- Scopus
- Web of Science.

Screening and eligibility assessment

Records from the search were imported into EndNote, deduplicated then screened for relevance using title and abstract, with the remaining articles being screened for eligibility against the PICo criteria and the following inclusion and exclusion criteria:

Inclusion criteria:

- Empirical study, qualitative, quantitative or mixed-methods
- Children with developmental language disorder
- Children aged 4–12 years
- Measures peer relations
- Available in English
- Methods include direct engagement with, or observation of children
- Published any time up until 25 May 2020

We target children at the age of 4–12 years as this is a period of major social-cognitive developments in relation to self and others (Erikson, 1959; Selman, 1980).

We included any study that directly involved children in the research methodology in any way. We considered this to be the most effective way of gaining an overview of the relevant literature and of obtaining a perspective on different degrees and methods of children's participation in research – from research participation through to co-production.

Exclusion criteria:

- Theoretical studies
- Review/meta-analysis
- Language disorder is not primary focus

- Focus on phonological difficulties, speech sound disorder
- Study only engages with children for verbal or non-verbal IQ assessment

Synthesis and analysis

We analysed the selected publications in three steps.

Firstly, we read through the articles and developed a way to categorise them.

Secondly, we synthesised the research evidence within each category using narrative synthesis (Popay et al., 2006; Ryan, 2013) and integrated findings from studies addressing a range of questions, using different designs, where meta-analysis is not feasible (Ryan, 2013). Following this text-based approach, we summarised and explained findings from the reviewed studies (Popay et al., 2006) and highlighted salient points relevant to participatory approaches.

Finally, we extended the narrative synthesis beyond within category findings to look for themes and patterns across the category groups.

Results

Screening and eligibility assessment

All retrieved publications ($n = 15{,}977$) were initially screened through database filters to exclude records not available in English or targeting populations outside of the 4–12 age group. The remaining records ($n = 6{,}513$) were reviewed in the steps outlined in the PRISMA chart in Figure 2. Fifty-two articles were selected for further analysis (see Table 2 supplementary materials).

Categorisation of studies

In this first analytical step, we grouped the articles ($n = 52$) into categories according to study methods:

Interview ($n = 4$). These studies involve direct, 1:1 or focus group consultation with children.

Sociometric ($n = 10$). These studies seek information from both children with DLD and their peers to inform about their mutual relations. Typically, sociometric studies may ask children to nominate their preferred playmates or to identify the most and least popular children in their class.

Self-report ($n = 12$). These studies ask children to complete questionnaires to assess their subjective experiences.

Individual task-based ($n = 4$). These studies ask children to complete short tasks designed to evaluate competence in different areas, for example Theory of Mind.

Naturalistic observation ($n = 12$). These studies use observational methods such as video recording and annotation to collect data on children's use of language and behaviours in naturalistic settings.

Staged observation ($n = 10$). These studies also observe language use and behaviours of children, but in researcher set-up rather than naturalistic groups.

For articles where multiple methods are used, a study is listed in the category that includes the more active participation of children or peer relations.

Within-category narrative synthesis

Aligning with methodological strategies, each of the categories examine specific constructs, e.g. social cognition in task-based studies, behaviours in observations. We are inclusive of all investigated constructs, as we aim to synthesise findings from all peer relations studies involving children with DLD, without limiting ourselves to specific constructs. All constructs speak to the SAM.

We also sought and recorded examples of good practices concerning children's participation within each study type. While we did not have a specific list of practices in mind when selecting examples, we looked for indicators that children's participation had been considered and facilitated. Inspired by other research on children's participation, we predicted this might include activities such as gaining informed assent, using a multi-modal approach to communication, adapting to specific communication needs and preferences and community involvement in the research agenda.

Interview studies

We identified four studies involving children in interviews. The study designs used variations of focus group interviews (Markham et al., 2009), workshops (Roulstone & Lindsay, 2012) and multiple one-on-one interviews (Lyons & Lindsay, 2017; Merrick & Roulstone, 2011). Three interview-based studies were peer reviewed published articles (Lyons & Roulstone, 2018; Markham et al., 2009; Merrick & Roulstone, 2011) and one was a governmental report (Roulstone et al., 2012). We find it encouraging that every interview-based paper referred to the United Nations Convention on the Rights of the Child (UN CRC; UN General Assembly, 1989) and recognised the need for a more active voice of children with DLD.

Regarding children's participation in research, we deem all interview-based studies reviewed here as achieving some degree of true participation. Roulstone and Lindsay (2012) explicitly noted that the research findings would be built in the services and thus enhance the delivery outcomes for children with DLD, achieving 'Consulted and informed'

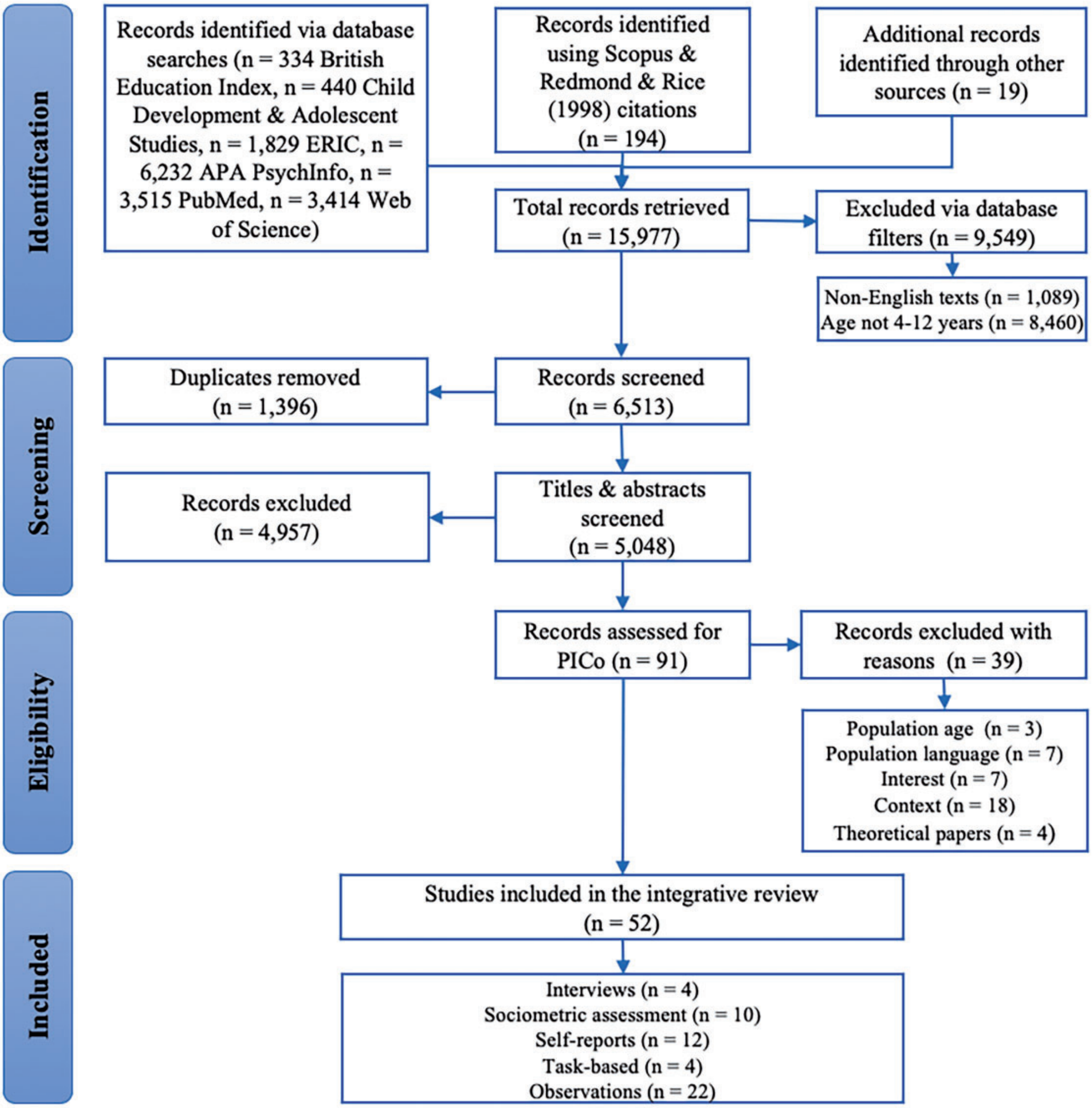

Figure 2. Study selection flow diagram. The flow diagram template was adopted from the PRISMA statement (Moher et al., 2009).

participation stage (Hart, 1992). We consider the participatory designs of the remaining three studies (Lyons & Roulstone, 2018; Markham et al., 2009; Merrick & Roulstone, 2011) as seeking further knowledge about the views and experiences of children with DLD, without an immediate clinical application. However, because of the open-ended and flexible format of the interview process, we would place these studies above pure tokenism.

Illustrating good practice in engaging children in research, all studies involved different art-based activities, from drawings (Roulstone & Lindsay, 2012), taking photographs and compiling a scrapbook (Merrick & Roulstone, 2011), using personal photographs as prompts (Lyons & Roulstone, 2018), to playing a picture-card game (Markham et al., 2009). Studies reported using semi-structured interviews adjusted to children's age and needs – e.g. the use of visual aids or shorter interview time with younger children. One study complemented interviews with additional wellbeing data from children's self-reports and parent questionnaires (Hart, 1992; Roulstone & Lindsay, 2012).

With respect to the Social Adaptation Model (SAM), this group of studies gives insight into which aspects of social adaptation matter from the child's perspective. In every interview-based study, children with DLD confirmed that peers play a crucial role in their daily experiences and quality of life. Concerns about being socially accepted or bullied were also common. On the positive side, all four studies report that children with DLD perceive their friends as active agents, who can help make their lives easier. Involving different age groups reflected the developmental perspectives on children's peer relations (Markam et al., 2009). The younger ones appreciated having someone to play with, while older children looked for deeper connections (Markham et al., 2009).

Further peer-related concerns uncovered were that children with DLD often did not know what to talk about with their classmates, who, in return, did not always include them in the conversations of the wider group (Lyons & Roulstone, 2018; Roulstone & Lindsay, 2012). Children with DLD could feel excluded as a result (Merrick & Roulstone, 2011; Roulstone & Lindsay, 2012). In school, they could also feel singled out when receiving extra support or after returning from their special language classes (Lyons & Roulstone, 2018). Thus, the reported interview studies suggest that both limited language and relevant school provisions could make children with DLD feel isolated from their peers.

Interviews revealed further examples of emotional experiences that we see as positioning subjective well-being as a link between language and peer relations. Sometimes, children with DLD found it annoying if they needed to keep repeating themselves or corrected their speech when talking to their friends (Lyons & Lindsay, 2017; Markham et al., 2009). In other cases, they could be misunderstood and teased because of their limited language (Markham et al., 2009). A few of the interviewed children with DLD were aware of that not all friends are the same and some – true friends – have better friendship qualities than others and do not focus on speech/language difficulties (Lyons & Roulstone, 2018; Merrick & Roulstone, 2011). True friends could even protect children with DLD by letting other children know about their speaking difficulties (Merrick & Roulstone, 2011). To us, perceiving interpersonal qualities in others and distinguishing between true friends and acquaintances denote theory of mind and emotion awareness abilities as guiding the behaviour of children with DLD.

Sociometric studies

Sociometric studies seek children's views on the social structure of their peer group by asking them to nominate the most- and least-preferred playmates. From the participatory research perspective, the 10 identified studies used sociometric and friendship measures in rather tokenistic or maybe even decorative ways (Hart, 1992). The difference between tokenism and decoration was, however, hard to judge based on the information given. No study reported active child participation as a particular aim or reported if there was any stakeholder involvement in the research design.

Perhaps the study keeping with the most participatory research ideas was that of Schneider (2009), who introduced an interview element, asking children about the reason behind their nominations. We perceive this approach as giving children a bigger scope to express their ideas. This strategy aligned with the tokenistic approach to engaging children in projects as described by Hart (1992).

In terms of good practice followed in the sociometric studies analysed, only Schneider (2009) specified that verbal assent was sought from children. For the remaining studies, it was not clear whether children were informed about the research and gave their assent. All studies in this category reported using child-friendly methods that do not rely heavily on language and communication abilities. Examples of good practice involved reading classmates' names aloud and using visual supports such as photographs and emojis for the rating scales (Fujiki et al., 1996; Guralnick, et al., 1996; McCabe & Meller, 2004; Schneider, 2009).

The general findings of identified sociometric and friendship nomination studies confirmed that children with DLD are at risk of poorer peer relations, although there were some exceptions. Four comparative studies found that children with DLD received more disliked nominations in comparison to their TD classmates (Andrés-Roqueta et al., 2016; Gertner et al., 1994; Laws et al., 2012; Schneider, 2009). Another group comparison study showed that children with DLD report significantly less contacts with peers than their age-matched classmates (Fujiki et al., 1996). On the other hand, McCabe and Meller (2004) found no differences in either peer nominations or mutual friendships. However, it is important to note that their methodology meant that children with DLD could rate only their classroom peers with DLD and the TD children rated only their TD peers. Guralnick et al. (1996) found that peer acceptance measured by nomination was not significantly different between children with communication disorder and their peers within small groups. Nevertheless, complementary observations showed that children with communication disorders were less integrated (Guralnick et al., 1996). We consider the reported studies' findings as indicating that sociometric assessment is sensitive to the levels of children being acquainted with each other or that individual differences result in some children with DLD being equally accepted as their TD peers.

Similar inferences could be made from a longitudinal assessment of changes in peer acceptance. Investigating the change in placement arrangements, Laws et al. (2012) found that children with DLD received significantly fewer negative ratings from their classmates and their positive ratings did not change significantly, after they moved from a specialist language base to a mainstream classroom. However, improvements were shown at individual levels with three out of four children with DLD receiving more positive and fewer negative peer nominations (Laws et al., 2012). This trend could result from changes in the classmates' perspectives as children get to spend more time together or due to natural developmental changes leading to an increased tolerance in children (Laws et al., 2012). Despite one unsuccessful case, the prevailing decrease in negative peer ratings gives a positive outlook for how children with DLD are perceived by their peers with time.

Diving into the mechanisms influencing the nominations of children with DLD, some studies complemented sociometrics with adult reports. Two of these suggested no link between language ability and the likeability and friendships of children with DLD (Andrés-Roqueta et al., 2016; Fujiki et al., 2013). However, a study using *direct* measures found positive nominations significantly linked with expressive, receptive and articulation abilities while negative nominations were associated with poor articulation (Gertner et al., 1994). Similarly, Schneider (2009) found positive associations between language and sociometric status in preschool-aged children, whose language score accounted for 33% of the variance in social status. By fifth grade, the language – social status link was not significant, suggesting language might play smaller role in children's friendships as they grow older (Schneider, 2009). In eighth grade, the relationship was substantial, with language accounting for 7% of the variance in social status (Schneider, 2009). When testing for the unique contribution of language towards social status, regression analysis confirmed the importance of language over age, race, gender, socioeconomic status and the number of years attending the school in pre-schoolers and eighth graders (Schneider, 2009). This study varied importance of language in social status among different age groups, implying that different within-child factors may be more important at different points in development.

Analysing the qualitive component, Schneider (2009) grouped all reasons for positive and negative nominations into categories and calculated category percentages for each age and language group. In preschool, play/companionship (playing together, sitting and talking together) led the reasons for positive nomination for both children with DLD and their TD peers, receiving 60% and 50% of positive comments respectively (Schneider, 2009). In fifth grade, play/companionship again led as reasons for positive nomination (45% of positive comments) but while children with DLD received more than double the percentage of comments on validation/caring, their TD peers were more likely to have long-standing friendships (Schneider, 2009). In negative peer nominations, the most often mentioned characteristics justifying the pre-schoolers' choices were disruptive behaviour for children with DLD and play/companionship (doesn't play with me, doesn't talk to me) for their TD peers (Schneider, 2009).

We interpret the imbalance in peer nominations among children with DLD and their TD peers as suggesting differences in social understanding. Children with DLD tended to give significantly more positive responses and less negative or neutral nominations to their mainstream classmates (Laws et al., 2012), indicating to us a potential positivity bias of children with DLD towards their classmates. In an intervention study, nominated best friends gave the lowest ratings to children with DLD who nominated them (Fujiki et al., 1999). This could mean that children with DLD may not fully grasp the nature of friendship quality (Fujiki et al., 1999). In our view, the misalignment of peer nominations among the groups could reflect differences in peer perceptions.

To summarize, peer and friendship nomination studies provide some insights into the links between linguistic development and peer relations outcomes. Peer nominations confirm that children with DLD are less accepted, particularly in early years of schooling. Language and communication intervention may not bring about positive changes in peer nominations, suggesting other influences upon friendships. The positively biased way children with DLD nominate their peers, the misalignment in their friendship nominations as well as social cognition tasks suggest that understanding others and perceiving peers as friends could significantly contribute to their social relationships.

Self-report questionnaires

Twelve articles used self-report questionnaires as the main tool for collecting data from children with DLD. Most of the identified studies compared the scores of children with DLD to their TD peers' scores (Arkkila et al., 2011; Klara Marton et al., 2005; Nicola & Watter, 2018) or to the scores of children with different language or behavioural difficulties (Gough Kenyon et al., 2020; Lindsay et al., 2008; Redmond, 2011). Several longitudinal studies examined the developmental trends of children with DLD (McCormack et al., 2011; van den Bedem et al., 2018, 2019), in different school settings (Conti-Ramsden & Botting, 2004), or compared different age groups of children with DLD (Jerome et al., 2002). Studies were based in several countries, including Australia, Finland, Netherlands, UK and the United States.

Although the locations and designs of studies varied, they shared similar approaches towards participatory research methods with children and learned about children's own perceptions and experiences through self-reports. A few studies reported getting assents from children to participate (Gough Kenyon et al., 2020; Nicola & Watter, 2015, 2018), which corresponds with the 'Assigned but informed' rung of the Hart's (1992) ladder. Arkkila et al. (2011) gained written consent from eight- to eleven-year-old children, as well as from their parents. These children were older than some children in other studies and thus more likely to understand a written consent form and be able to sign their names. In terms of adult consents, only two other studies mentioned seeking one from teachers or parents of participating children (Lindsay et al., 2008; McCormack et al., 2011). Nevertheless, Gough Kenyon et al. (2020) and McCormack et al. (2011) advocated for the children's views to be included in our efforts to understand their experiences and with this regard, also referred to the United Nations Convention on the Rights of the Child (UN General Assembly, 1989).

As examples of good practice, researchers described some of the ways that they had adjusted their methods to support children and particularly children with DLD. Using pictorial scales, simplified and locally-adapted language (e.g. changing 'smart' to 'clever'), colour coding, illustrations, or reading aloud questions were some examples (e.g. Jerome et al., 2002; Lindsay et al., 2008; Marton et al., 2005; van den Bedem 2018). Further, Nicola and Watter (2015, 2018) asked parents and teachers to stay nearby and provide communication support in case the participating children in their study struggled to understand the questionnaire. In summary, researchers using self-reports typically did not explicitly acknowledge the importance of gaining children's insights about matters that impact their lives; however, they focused their studies upon the life experiences of children, involved children directly, and adjusted research methods accordingly.

Self-report studies investigated the children's self-perceptions of quality of life, health, academic achievement, self-esteem and relationships. In the context of peer relations, pragmatic language abilities emerged as an important factor in the reviewed studies. Compared to TD peers, children with DLD scored lower in conflict resolution and negotiation scenarios, requiring appropriate use of language in complex contextual circumstances (Marton et al., 2005). Children with DLD could have misinterpreted communicative intentions and reacted with socially inaccurate verbal and non-verbal responses (Marton et al., 2005).

Emotional experiences and understanding were other psychosocial attributes explored via self-reports on victimisation and bullying. In terms of receptive language abilities, children with DLD in Redmond's (2011) and van den Bedem's et al. (2018) studies had higher reports of physical and verbal victimisation associated with stronger language comprehension abilities. We link these findings with the potential lack of insights into peer relations as mentioned above – children with poorer abilities may misinterpret behaviour intended to victimise them.

Children with DLD also reported a significantly higher number of bullying incidents compared to their TD peers (McCormack et al., 2011). A positive learning is that the developmental trends in children with DLD and their TD peers showed decrease in reported victimisation in both groups (van den Bedem et al., 2018). Decreasing victimisation as well as bullying seemed to be linked with increased understanding of children's own emotions (van den Bedem et al., 2018). Higher and increasing sadness and fear appeared to explain more strongly perceived victimisation, while elevated and increasing levels of anger contributed towards children's own bullying behaviours (van den Bedem et al., 2018). While these relations were observed equally in children with DLD and their peers, understanding emotions had greater effect on lower victimisation in children with DLD than their peers (van den Bedem et al., 2018). Therefore, we suggest that interventions with children with DLD may need to target advanced emotion recognition abilities alongside language skills. We believe that developing more complex social cognition skills could help improve peer interactions and tackle the elevated levels of perceived victimisation in children with DLD.

Self-perceptions and evaluations of the quality of life by children with DLD gave important insights about their internal world. Children with DLD saw themselves as having significantly lower academic competence (Jerome et al., 2002), which tended to be their biggest concern for the transition to secondary schools (Gough Kenyon et al., 2020). On the contrary, social competence was what concerned most their TD peers when moving onto secondary school (Gough Kenyon et al., 2020). Still, as evident in the previous categories, children with DLD believed that they had low social abilities (Lindsay et al., 2008; Marton et al., 2005) and were less accepted by their peers (Jerome et al., 2002). The low social self-perception is backed up by the social functioning reports, where children scored themselves much lower than their parents, whose reports on children's social functioning were already low (Nicola

& Watter, 2015). When reporting on their quality of life, children with DLD scored their physical functioning much lower than was the population average (Nicola & Watter, 2015).

Despite the negative self-reports, children with DLD were interested in having positive relations with their peers in school (Lindsay et al., 2008) and their prosocial motivation was linked with better quality of their friendships (van den Bedem et al., 2019). At the same time, children with DLD reported that it is less easy for them to make friends in comparison to their TD peers (McCormack et al., 2011). Interestingly though, having more friends did not seem to have decreased the bullying experiences in children with DLD (Redmond, 2011). We theorise that perhaps friendship quality and not quantity could improve the experiences of peer interactions in children with DLD. Van den Bedem et al. (2019) partially explored this relationship when investigating the links between friendship quality and aspects of empathy to learn that indeed, higher quality of friendships contributed to cognitive empathy, prosocial motivation and affective empathy. As the importance of good friends has been proven via empathy self-reports, we can see it feeding into social cognition as an important psychosocial attribute for positive experiences in peer interactions of children with DLD. Identifying specific areas, in which good friends contribute to how children with DLD appreciate friendships could improve their peer experiences not only in school but also in the broader contexts of children's lives.

Task-based studies

The four studies using task-based measures assessed theory of mind, emotion awareness, conflict resolution strategies or metalinguistic problem solving, alongside verbal and non-verbal abilities (Bakopoulou & Dockrell, 2016; Farmer, 2000; Meline & Brackin, 1987; Timler, 2008). In addition to age and language matching to TD peer groups, one study included two groups of children with DLD – one from a special school and another from a language unit adjacent to a mainstream school (Bakopoulou & Dockrell, 2016). In addition to tasks designed for children, two studies collected data about children's socioemotional functioning via teacher-report and/or parent-report (Bakopoulou & Dockrell, 2016; Farmer, 2000; Timler, 2008).

Considering the extent of genuinely participatory methods used in the reported task-based studies, the task-based measures pre-determined the levels of children's active involvement. Children provided information for the study with a limited scope to present their opinions. Although the tasks in the included studies cannot reveal children's perceptions and priorities, they are important to directly assessing children's abilities and needs. The studies' designs and methods justified the lower levels of children participation as specified by Hart (1992). To move up the Hart's (1992) ladder of participation, children could be considered as consultants when planning the study or interpreting its findings.

In terms of good practice, the information provided in studies did not recognise the active voice of children in research, children's participation, or child assent. This is not to say that the task-based studies did not follow child-centred and child-friendly approaches. Indeed, many of the tasks were highly visual, computer-supported or based on a story. Our reflection simply intends to acknowledge that children may need to be more explicitly recognised as informed participants in studies. Such an approach would strengthen the perceived position of children in research and perhaps encourage more frequent and active participation of children in studies.

The reviewed task-based studies demonstrate the links between language abilities and social cognition. The first study (Meline & Brackin, 1987) referred to this link as metalinguistic or metacommunicative problem solving and demonstrated that unlike age-matched peers, children with DLD less readily understood the problems caused for a listener by under-informativeness on the part of a speaker (Meline & Brackin, 1987). Relatedly, Farmer (2000) found that children with DLD could less accurately attributed mental states and recognised sarcasm, jokes, lies, pretending or mixed emotions when compared to TD peers (Farmer, 2000).

Studies report varied performance of children with DLD on social cognition tasks however. They had difficulties in recognising and inferring emotional reactions related to sadness, anger and fear (Bakopoulou & Dockrell, 2016). In a study testing first and second order theory of mind, children with DLD did *not* differ from their peers (Farmer, 2000). Similarly, in a conflict situation, both groups generated the same number of resolution strategies that were led by self-interest over relationship, though, children with DLD generated far fewer prosocial strategies (Timler, 2008). Task based studies also showed that children with DLD struggled with language-mediated conflict resolution, such as seeking clarification from peers (Bakopoulou & Dockrell, 2016). In summary, task-based studies link language and social cognition while directly engaging children with DLD.

Observation studies

We identified 22 studies drawing on observations of children with DLD. We split these into two categories:

naturalistic ($n = 12$) and staged ($n = 10$) observations. Almost all naturalistic observations investigated the social functioning of children with DLD in the classroom or playroom. The social interaction behaviour and language of children with DLD were assessed with the focus on friendship formation (Guralnick, Gottman, et al., 1996), play behaviours (Guralnick et al., 2006), conversation patterns (Hadley & Rice, 1991; Henton, 1998), conflict resolution (Horowitz et al., 2005, 2006, 2008) or general interactions (Fujiki et al., 2001; McCabe & Marshall, 2006; Rice et al., 1991). Two studies evaluated interventions aiming to enhance peer-group entry behaviours and initiations (Beilinson & Olswang, 2003; Schuele et al., 1995). The 'staged' studies observed situations deliberately setup by researchers to investigate cooperative behaviours (Brinton et al., 1998, 2000; Murphy et al., 2014; Musselwhite et al., 1980), group participation (Liiva & Cleave, 2005; Salmenlinna & Laakso, 2020), conflict resolution abilities (Stevens & Bliss, 1995) and paired interactions (DeKroon et al., 2002; Fey & Leonard, 1984; Robertson & Ellis Weismer, 1997). Both categories of observation studies sought to understand the peer interactions of children with DLD. Naturalistic observations revealed the broader context of socioemotional functioning for children with DLD and the inclusion tendencies of their peer groups. In contrast, the staged observations supported our understanding of a more intimate dynamics between interacting partners, capturing the details of their language and behaviours.

Observation studies do not require a child's active engagement, but they do allow the researcher a direct view of the child's world and experiences (Pellegrini, 2001). Similar to the previous category of task-based studies, we see an opportunity for observation designs to promote a genuine participation of children in research by consulting children about the study goals and methods at the planning stages or when interpreting findings.

Regarding the good practice of participatory studies with children, the reported observation studies did not specify these aspects of their research. In the naturalistic observation category, only Horowitz et al.'s (2005, 2006, 2008) mentioned obtaining informed consent from parents and children themselves. Perhaps the use of filming might have prompted researchers to report on this ethical aspect of the study. It is possible that the free-play observation design could have evoked an impression that practically, since no additional activities or behaviours were required from children, there was no need to inform children about the study. Some scholars may take the view that revealing details about the study could lead to an observer paradox and participants' behaviours could change as result (Labov, 1972). For the staged observation studies, a few studies mentioned parental consent (e.g. Brinton et al., 2000; DeKroon et al., 2002; Murphy et al., 2014; Salmenlinna and Laakso, 2020) and just one referenced informed assents from children (Murphy et al., 2014).

Turning to discuss the studies' insights about links between language and peer relationships, the naturalistic observations investigated children's behaviour in different settings. Some studies targeted integrative settings, where children of different language abilities interact together (e.g. Beilinson & Olswang, 2003; Fujiki et al., 2001; Hadley & Rice, 1991; McCabe & Marshall, 2006; Schuele et al., 1995), and others focused on comparing groups of children with similar levels of language and communication (Henton, 1998; Horowitz et al., 2005, 2006, 2008). Guralnick and colleagues (Guralnick et al., 2006; Guralnick, Connor, et al., 1996; Guralnick, Gottman, et al., 1996; Guralnick & Hammond, 1999) conducted their research in both settings – mainstream or inclusive groups, as well as specialised groups of only children with similar developmental profiles. Four studies also explored how children with DLD interact with adults who are present in larger groups of children.

Observations of play behaviours of children with DLD revealed significant differences to their TD peers. Liiva and Cleave (2005) found that they spent significantly more time in solitary and onlooker play compared to peers. A similar trend, although not significant, was confirmed in a staged study that found children with DLD spent most of the time watching their TD peers and not participating in the activity (Brinton et al., 1998).

To investigate conflict resolution, sociodramatic play was used as a safe context. Although children with DLD were observed to enact a similar total number of resolution strategies as their TD peers in a hypothetical conflict scenario task, they generated fewer different types of strategies (Stevens & Bliss, 1995). Differences were noted in cooperative conflict resolutions that build on social cognition, and particularly perspective taking, persuasion, explaining, mutual decision-making, which are all language demanding skills (Stevens & Bliss, 1995).

In summary, observations of peer interactions revealed specific behaviours, social cognitive and linguistic abilities, essential for establishing successful peer relations of children with DLD.

Discussion

Overall, participatory approaches to research investigating the peer relations of children with DLD is limited in extent and represents an area where the field could improve. The most genuine participatory methods that eliminate the perceived power imbalance can be achieved through establishing a shared agenda, appropriate consenting process, accommodating children's needs and promoting their wellbeing throughout the study (Cornwall & Jewkes, 1995); Lewis & Porter, 2004). In practice, this could also mean acknowledging children's feelings (Merrick, 2014). Yet, we found little evidence of such approaches. Qualitative, interview-based studies were most likely to give children with DLD an active voice and to explicitly acknowledge the 'child participant' – 'adult researcher' power imbalance. Relating this back to Hart's ladder of child participation (Hart, 1992), these studies achieved the highest level in the present review. There is a potential to move up the Hart's (1992) ladder by consulting children about research goals, designs, methods, and interpretations of results, so that children take a more meaningful role in the studies aiming to understand and improve their lives.

Regardless of the extent of participatory methods, the reviewed studies demonstrated good practice in conducting research involving children with DLD. Throughout the studies there were some excellent examples of using visual supports or art-based approaches suited to the needs of children with communication disabilities (e.g. van den Bedem et al., 2019). Only a few studies, including interviews (e.g. Markham et al., 2009), sociometric studies (Schneider, 2009), self-reports (Arkkila et al., 2011; Gough Kenyon et al., 2020; Nicola & Watter, 2015) and staged observations (Murphy et al., 2014), reported seeking assent from children. The reviewed naturalistic observations and task-based studies do not report requesting informed assent from children. We conclude that chosen research method may play a role in the perceived importance of participatory considerations or reporting on this step in the study write up.

What can the field learn from these examples? We encourage all empirical researchers investigating the life-worlds of children with DLD to consider using and reporting on the following, 1) community or stakeholder involvement in research priorities and questions, 2) child-friendly information and consent/assent processes, including learning non-verbal behavioural cues for children less able to communicate using oral language, 3) use of multimodal communication and consideration of individual preferences for adjustments – examples drawn from the current review include use of art-based self-expression, visual Likert-scales, and availability of sign-language or adult assistance in tasks/questionnaires. The recent priority setting partnership exercise carried out by the Royal College of Speech and Language Therapists (2020) gives a strong starting point for researchers wanting to know more. Furthermore, we recommend that where participatory approaches are not judged relevant/appropriate, reasons for this are given.

We now turn to address our final research question, which asks, *Do different insights arise from different methods of child involvement in research, when considering links between language and peer relations in children with DLD, within the SAM framework?* To recap, the SAM framework suggests that social challenges arise from a combination of the communicative demands of the environment, the verbal resources available to the child and the biases of others.

Studies using both tasks and sociometric data, show that results from direct language assessment are linked to children's social relationships, particularly in preschoolers (Andrés-Roqueta et al., 2016; Fujiki et al., 2013; Gertner et al., 1994; Schneider, 2009). This contrasts with findings of a null-relation when adult reports are used (e.g. Mok et al., 2014). This implies that limited verbal resources do play a role, and that direct language assessments might be the best way of gaining more information relevant to children's social functioning.

Further, data from observations show that it is not the frequency or length of utterance that matter to peers, but rather the poor social use of language and low linguistic sophistication make a difference (DeKroon et al., 2002; Salmenlinna & Laksoo, 2020). These findings are backed up by self-reports, task-based and observation studies, confirming the breadth of vocabulary knowledge as minimally related to how successful children with DLD are at using language to reconcile peer conflict (Bakopoulou & Dockrell, 2016; Horowitz et al., 2005, 2008; Marton et al., 2005). It is important therefore that researchers acknowledge that in the context of the SAM, 'verbal resources' includes not only syntactic and semantic language but also social and linguistic pragmatics.

Secondly, the reviewed studies indicate subjective wellbeing and self-conceptualisation as important links between language abilities and social adjustment (e.g. Fujiki et al., 2001; Jerome et al., 2002; Lyons & Roulstone, 2018; Marton et al., 2005). The interview-based studies reveal children with DLD being aware of their limited language abilities and unsure about topics to bring up with their peers (Lyons & Roulstone, 2018; Merrick & Roulstone, 2011). The self-reports confirm this, and children with DLD report believing themselves to have poor social abilities, and less peer acceptance, consequently they can feel isolated and physically or academically incompetent (Jerome et al., 2002; Lindsay et al., 2008; Nicola & Watter, 2018; Nicola & Watter, 2015; Marton et al., 2005).

On the other hand, there are reports of positive self-perceptions (Roulstone et al., 2012) and prosocial tendencies have been confirmed by both self-reports and observations; children with DLD want to get on well with their peers (Lindsay et al., 2008; van den Bedem et al., 2019). Furthermore, their withdrawn play behaviours are revealed by observation as not passive/disinterested but rather shy and active (Fujiki et al., 2001). A reason for this variable self-concept may be that while children with DLD perform similarly to their TD peers in more straightforward assessments of social cognition, such as theory of mind tasks (Farmer, 2000), they perform poorly in more complex tasks of emotion recognition and prosocial conflict resolution skills (Bakopoulou & Dockrell, 2016; Timler, 2008). It could be the case that low self-perception and self-esteem, together with previous negative experiences, sabotage the way children with DLD make the most of their language abilities, theory of mind and emotion knowledge in social communication situations. Taken together, we suggest that self-perceptions are relevant to the SAM, in addition to the already present 'biases of others'. The implication here is that longer term impacts of social challenges may reduce the opportunities for social learning in children with DLD and, over time, there may be an impact on the psychosocial attributes that were assumed to be intact according to the initial version of the SAM.

Clinical implications

The findings suggest that interventions could potentially target pragmatic language skills as well as more traditional structural language skills in children with DLD, even where pragmatics may not be the initial presenting problem, as children seem to highlight *use* of language as most significantly impacting peer perceptions. This tallies with population level findings of pragmatics as a potential mediator of social difficulties (Law et al., 2015), and that structural language is a significant predictor of pragmatic language abilities (Norbury et al., 2017). It aligns with therapeutic approaches to pragmatic language impairments that include structural language development as intervention targets (Adams et al., 2012, 2015). To the best of the authors' knowledge and clinical experience, it is rare for interventions to target pragmatics unless difficulties are considered disproportionate to underlying language skills and so this could be an interesting new direction for studies aimed at preventing negative social sequalae of language disorders.

Relatedly, children with DLD feel motivated to socialise yet not sufficiently equipped to succeed. Although they perform relatively well on the assessment of individual social cognition tasks, such as theory of mind and emotion identification, children with DLD find it difficult to apply these skills in context of peer interactions and particularly, in conflicts. Furthermore, unsuccessful interactions hold them back from trying. Studies engaging children show that the more actively children with DLD behave towards or in response to their peers, the more accepted they are, and so again this raises interesting routes for preventative interventions. Findings also suggest that self-concept may be a more important target than 'social skills' when it comes to supporting children with DLD in developing capacities for strong friendships. This is an interesting insight and could be tested via experimentally designed studies.

Strengths and limitations

Before drawing conclusions, we briefly outline the strengths and limitations of the present review. To the best of our knowledge, this integrative review is the first to emphasise the importance of a participatory approach when researching peer relations of children with DLD. Important strengths include a clear, replicable methodology, inclusion of qualitative and quantitative studies and a focus on child-voice. There are also some limitations to note. Firstly, the quality of included studies was not assessed meaning that there is no appraisal of the robustness of the evidence base. While this is common in systematised integrative reviews, it is important to keep this in mind when interpreting results. Secondly, due to resource constraints, abstracts were not double screened, and we could have missed out a study. There is no reported inter-rater reliability for the inclusion/exclusion decisions either. To compensate for this, the list of excluded studies is included in supplementary materials. Finally, the speech and language difficulties targeted in the selected studies may not necessarily align with the definition of DLD by modern criteria (e.g. Bishop et al., 2016). However, a broad approach was taken in order to learn from previous studies that use different terminologies.

Conclusion

To conclude, the present review demonstrates that research on the peer relations of children with developmental language disorder is in the early stages when it comes to taking a participatory approach. However, there are some examples of inclusive practice from which the whole field can learn. The findings show that research that directly includes children with language disorders and takes account of their communication challenges can help build a more comprehensive knowledge of their world and leads to interesting avenues for interventions targeting social adjustment.

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ORCID iDs

Janik Blaskova https://orcid.org/0000-0003-3019-0880
Jenny L Gibson https://orcid.org/0000-0002-6172-6265

Note

1. While the level of complexity in children's experiences means that peer relations, peer interactions and friendships are often studied as distinct constructs (Bukowski, Laursen, & Rubin, 2018), we take a broader approach using 'peer relations' as an umbrella term encompassing all of these. This enables us to engage with literature that may not always differentiate between the constructs.

Supplemental material

Supplemental material for this article is available online.

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