Inference making skill in children with visual impairments

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Abstract

There is a scarcity of research examining the reading comprehension skills of partially-sighted children despite evidence indicating that they lag behind their typically-sighted (TS) peers in reading comprehension ability. We compare the performance of children with visual impairments (VIs) with that of chronological-age matched TS counterparts on a task that requires them to make emotional, temporal and spatial inferences from short texts. The findings indicate that children with VIs exhibit a specific deficit in drawing inferences about spatial information in narratives as opposed to emotional or temporal information. The results are discussed in relation to the role of visual acuity in imagery skills and how this affects the construction of a mental model of a text.

Key words: *reading comprehension*; *inference-making skill*; *visual impairment*; *education*

Inference-Making Skill in Children with Visual Impairments

Good reading comprehension requires the orchestration of a number of different skills; words must be decoded and their meanings retrieved, sentence meanings need to be derived, information from successive sentences must be integrated, and inferences must be made to connect the text and integrate it into a coherent whole. There are many frameworks or models of skilled text comprehension (see McNamara & Magliano, 2009, for a review) all of which emphasise the need for the reader to establish text coherence through processes such as integration and inference, and the requirement that the end product of comprehension should be an integrated and coherent representation of the text as a whole. This mental representation is variously termed a *Mental Model* (Johnson-Laird, 1983) or a *Situation Model* (Kintsch & van Dijk, 1978; Kintsch, 1998). The mental model of a text will include information about the people (their goals, emotions, actions and reactions), settings, and events either described explicitly or implied (Garnham & Oakhill, 1996). Furthermore, Therriault and Rinck (2007) argue that adults' mental models are multi-dimensional in that they will include causal inferences about spatial, temporal and emotional information in the text (i.e., information about characters' intentions, emotions and goals). Their findings indicate that adult readers are sensitive to inconsistencies within these different dimensions thereby demonstrating that such information is routinely represented in a situational model of a text. It is also clear that children can represent these different dimensions in their text representations (see, e.g. Wassenberg, Becker, van den Broek, & van der Schoot, 2015; van der Schoot, Reijntjes & van Lieshout, 2012).

Studies with typically-sighted (TS) children have shown substantial individual variation in their ability to make inferences from text. TS children who have reading comprehension problems have difficulties making even relatively straightforward inferences that connect up sentences (known as local cohesion inferences) (e.g. Oakhill, 1982) and they are also less likely than skilled readers to make inferences when reading or listening to text (e.g., Bowyer-Crane & Snowling, 2005; Cain & Oakhill, 1999; Oakhill & Cain, 2012; Oakhill, 1982, 1984). Moreover, these difficulties cannot be attributed to poor comprehenders' poorer memory for the text (Oakhill, 1984) nor to lack of background knowledge because even when good and poor comprehenders are matched for background knowledge poor comprehenders still show specific difficulties with inference questions (Cain, Oakhill, Barnes & Bryant, 2001) (for a review, see Oakhill, Cain & Elbro, 2019). Longitudinal and comprehension-age match studies with typically sighted (TS) readers indicate a causal relation between inference-making skills and reading comprehension (e.g., Barth, et al., 2015; Oakhill & Cain, 2012; Cain & Oakhill, 1999; Yuill & Oakhill, 1988; see also Elleman, 2017, for a meta-analysis)

Although there is a substantial body of research examining aspects of inference-making in TS children there are only a few studies (Edmonds & Pring, 2006; Papastergiou & Pappas, 2019; Wyver, Markham, & Hlavacek, 2000) that have examined the same skill in children with a visual impairment (VI). In Edmonds and Pring's study, congenitally blind Braille users and TS participants were presented with short stories (in Braille for the children with VIs) that they either read aloud (Experiment 1) or had read to them (Experiment 2); these were followed by four literal questions and four questions requiring "implicit inferences" (i.e., the information required to make the inference was not stated explicitly in the text). They found that the children with VIs' ability to successfully answer inference questions not only distinguished skilled from less-skilled comprehenders within that group (akin to the findings with TS children), but that there were no significant differences between the VI and TS participants in their ability to answer local and global inferential questions.

Papastergiou and Pappas (2019) compared the inference-making skills of Braille users (8 Greek children who were congenitally blind, and 8 who were early blind) with TS children and, again, found that there were no differences between the TS and VI groups in local and global inference skill. These two studies used the same materials, which tapped the understanding of local cohesion (e.g., across sentences) and global coherence (across the narrative as a whole) inferences.

Although the findings with Braille users suggest that their local and global inference-making skills are comparable to those of their TS peers much less is known about the inference-making skills of children with other degrees of visual impairment. Visual impairment affects approximately 19 million children under 15 years of age worldwide (World Health Organization, 2012) and of those an estimated 12 million children have vision conditions that could be easily diagnosed and corrected. Consequently, the estimated worldwide population of children under 15 years old with significant vision impairment is 7 million (World Health Organization, 2012), and in the UK there are around 25,000 children (0-16 years) with varying degrees of VIs (certified as partially-sighted to legally blind) attending mainstream schools (Morris & Smith, 2008). *Partially-sighted* (also often referred to as low vision) is the term usually used in educational contexts to describe a VI that requires special education services (see participant section for UK government criteria for partially-sighted certification) and a number of findings indicate that partially-sighted children's general reading comprehension ability lag behind that of their same-aged TS classmates (Douglas, Grimley, Hill, Long & Tobin, 2002; Douglas, Grimley, McLinden & Watson, 2004; Hill, Long, Tobin & Grimley, 2005).

For example, Douglas et al. (2002) tested the reading of 476 partially-sighted children using an unmodified print version of the Neale Analysis of Reading (NARA II, 1999) and found that the average reading ages for partially-sighted children for accuracy, comprehension and speed were below their chronological age and that this reading comprehension lag relative to TS children widened with increasing age (see also Douglas et al., 2004; Hill et al., 2005). Thus, although there is evidence demonstrating that partially-sighted children lag behind their TS classmates in terms of reading comprehension ability, and evidence with TS readers indicates a causal relation between inference-making skills and successful reading comprehension, there is only one study that has examined whether mainstream-educated, partially-sighted children have difficulties with inference-making skills when compared to their same age TS classmates. Wyver, Markham, & Hlavacek (2000) compared the inference-making skills of mainstream-educated children with varying degrees of VIs (n=15, mean age 8 years 11months,) with their TS classmates matched for gender, age, and general verbal ability (teachers' ratings). Children listened to stories and were then asked questions in which they had to decide if information they were presented with had been previously given in the story (they answered yes or no). They found no differences between children with VIs and TS children in their ability to answer the questions, however they noted that the children with VIs had particular problems with questions that involved 'distance' vision - such as judging what characters would have viewed from the top of a hill. The authors postulate this is because children with VIs have minimal experience with distance vision.

In light of the suggestion by Wyver and colleagues that non-Braille users, mainstream-educated children with VI's may exhibit difficulties in drawing inferences that rely heavily on visual experiences - such as inferring distance in narratives - this study compares the understanding of temporal, emotional and spatial information (both literal and inferred) in short stories; comparing the performance of partially-sighted children with that of their TS classmates matched for chronological age. No other studies to date have examined these dimensions of inference-making skill in children with VIs although, as mentioned, an effective mental model of a text includes causal, emotional, temporal and spatial details (see Wassenberg, Becker, van den Broek, & van der Schoot, 2015; Therriault & Rinck, 2007).

There may be some unique distinctions between children with VIs and TS children in their representations of text. For instance, it may be that children with VIs would have particular difficulties in forming mental representations of spatial information due to their lack of visual experience with such information (akin to the suggestion made by Wyver et al., 2000), and this may affect their spatial inference skills and their understanding of spatial information presented literally in a text. Mental representations of spatial information underlie our abilities to plan routes, locate and place objects and people within an environment, and to envisage entities from descriptions of their arrangements (Byrne & Johnson-Laird, 1989).

There is some evidence that individuals with VIs have difficulty representing spatial details during visualisation tasks. For example, Szubielska and Marek (2015) found that both partially-sighted and congenitally blind students are less accurate in using mental imagery to make size judgments than students who become blind later in life. In their experiments they asked participants to both mentally enlarge objects they had previously explored manually, and also to demonstrate the change in the size of an object imagined/visualised to be moving away. Judging where an object is located (near vs far) based on its relative size to other entities is a skill that involves spatial awareness. Three groups of high school students with VIs took part in the experiment: congenitally blind, late blind (i.e., who lost their vision at the age of 3 or later and retained memory of visual representations), and partially-sighted. The authors found the mentalising skills of partially-sighted participants to be no different to those of the congenitally blind participants (with both those groups performing significantly worse than the late blind group). They postulate that this is because both congenitally blind and partially-sighted children may have never seen well enough to develop and apply mental visualization techniques that would aid in size inferences, whereas late blind individuals retain memories of visual experience and can effectively use visualization strategies (Vanlierde & Wanet-Defalque, 2004). This suggests the partially-sighted children in the current study may have difficulties forming mental representations that include adequate details about spatial information.

Additionally, it may be that children with VIs will have difficulties with emotional inferences because children who have impoverished access to visual information sometimes exhibit deficient theory of mind skills (ToM; the ability to think about other's thoughts, feelings and desires). A number of prominent ToM theories (e.g., the theory of mind module or ToMM; the eye direction detector or EDD) argue for the importance of visual information and in particular visual interactions with others in the development of effective ToM skills (Baron-Cohen, 1995; Meltzoff & Gopnik, 1993). Moreover, Green, Pring and Swettenham (2004) found that children with congenital VIs showed a general pattern of delay in ToM development when compared to TS counterparts. Since children with VIs have been shown to have delayed ToM skills they may as a result show some difficulties understanding characters' emotional responses.

In summary, there has only been one study to date that has examined the inference-making skills of mainstream-educated, partially-sighted children and none that have looked specifically at their performance on different types of inference (spatial, emotional, temporal). This is despite research indicating that partially-sighted children lag behind their TS peers in reading comprehension skill and inference-making is casually implicated in reading comprehension. Based on findings with TS children we expect that all children will perform better on literal questions compared to questions requiring an inference (Cain & Oakhill, 1999). Based on the findings of Szubielska and Marek (2015) and in keeping with the suggestions of Wyver, Markham, & Hlavacek (2000) we anticipate that the partially-sighted children in the current study may have greater difficulties than their TS age-matched classmates when answering questions that require them to construct a mental model of spatial relations referred to both explicitly and implicitly in a narrative. In keeping with theories that argue for the importance of visual information in the development of effective ToM skills (Baron-Cohen, 1995; Meltzoff & Gopnik, 1993; Green, Pring and Swettenham, 2004) we anticipate that partially-sighted children may also perform significantly worse than their TS counterparts when answering questions about emotional information, although differences may be more pronounced when the emotion information needs to be inferred as opposed to being explicitly stated. We do not anticipate any differences between the groups in their understanding of temporal information (explicit or inferred).

Method

Partially-sighted participants: Twenty children (7 males) with visual impairments aged between 7 and 11 years (*M*=106 months) took part in this research. All were visited individually in their schools and administered the NARA II (Neale, 1999.), and the stories that required them to answer questions about the spatial, emotional and temporal dimensions (detailed below). All children attended mainstream schools located in predominantly middle-class areas of XXX (UK), all were referred through local authorities where they were registered as visually impaired and none received specialist support from a teacher of the visually impaired on a daily basis when in school, and none used Braille. All children had some residual vision. 15 of the children had been registered as visually-impaired from birth. All children were in receipt of a certificate of visual impairment (UK government issue) and met the government criteria of having either (a) visual acuity of 3/60 to 6/60 with a full field of vision, (b) visual acuity of up to 6 /24 with a moderate reduction of field of vision, or with a central part of vision that is cloudy or blurry, or (c) visual acuity of 6/18, or if a large part of the field of vision (e.g., a whole half of vision) is missing, or a lot of peripheral vision is missing (RNIB, 2019). The students were able to use large print books and Closed-Circuit TV (CCTV) or other magnifying devices to access classroom materials. No children had additional difficulties (e.g., ASD, MLD etc.). Table 1 shows the characteristics of the partially-sighted participants including cause of visual impairment, laterality and age of diagnosis.

TS participants: Twenty children aged between 7-11 years; 9 males (*M*=106 months) were visited individually in their schools and administered the NARA II and the spatial/emotional/temporal inference stories. The majority of both the children with VIs and TS children were from three different mainstream schools all situated close together in the same predominantly middle-class geographical location. None had any impairments (e.g., ASD, ADHD, MLD etc). These children were matched for chronological age and year group (and school where possible) with the children with VIs. The criteria for matching were that all pairs had to have chronological ages within 3 months of each other (mean difference in months across all pairs was < 1 month), and pairs must have come from the same year group. There was no significant difference between the groups in chronological age: $t(38) = .13$, $p = .90$. Participants were not matched for reading age (as derived from the comprehension scores on the NARA II) and therefore TS children had significantly higher reading ages than their partially-sighted counterparts: $t(38) = 3.63$, $p = .001$, which is in keeping with the findings of previous research comparing performance on the NARA II between TS and partially-sighted children matched for chronological age (e.g., Douglas et al., 2002; Douglas et al., 2004).

The experimental procedures were granted ethical approval by the institutional ethics committee.

Materials and Procedure

Children were seen individually, over two visits; at the first visit participants were administered the Neale Analysis of Reading (NARA II) and at the second visit they were administered The Story Task (all tasks detailed below). Both visits were conducted within 7 days of each other and neither visit exceeded an hour.

Reading Comprehension ability. All children were seen individually in a quiet area of their school (typically in a study area adjacent to the child's classroom) where they completed the NARA II. The NARA II is a standardised assessment of oral reading for approximate age range 6–13 years. It provides three scores of reading performance – accuracy, comprehension and speed. Reading comprehension is assessed by the ability to answer questions about each passage. Children read the stories out loud and for the children with VIs the text was provided in enlarged print the size of which was determined by their support worker and their classroom teacher. The scores for each group on all the tasks can be found in Table 2.

The Story Task. Each child was seen individually. Six stories of no more than 200 words each were used (see Appendix for examples and scoring criteria). The stories and accompanying comprehension questions were presented to 3 adult readers who classified each question according to whether it asked the reader about emotional, temporal or spatial information in the story; there was a 100% agreement across all 3 adults with regards to classifications of question type. All children were presented with the short stories in written format with the font in the preferred enlarged size for each child with a VI, in Arial black font. The printed stories for TS children were always presented in size 14 Arial black font. All children listened to a recording of the stories being read aloud and whilst listening they were required to follow the text. Following the presentation of each story, the children were asked the test questions orally, and their responses were recorded on the response sheet by the researcher. The questions were also provided in written format and the child was allowed to refer back to the written text when answering the test questions. In order to avoid fatigue effects, the 6 stories were randomly split into 2 sets each containing 3 stories, which were administered within the same test session but with a 15-minute break between each administration. The order of administration of the sets was counterbalanced across all participants. Each story was followed by two literal questions and two inference questions for each category (spatial, temporal, emotional). For each story, the questions were presented in a different random order for each participant. For each question, possible marks ranged between 0-2 depending on whether the question was partially or fully responded to by the child. Cohen's κ was calculated to determine the level of agreement between the two researchers' judgement on the total scores for the Story Task. There was moderate agreement between the two researchers' judgements, $\kappa = .589$, $p < .0005$, with disagreements resolved by discussion.

Results

Table 2 shows the scores for each task, for each group. As the maximum score possible for each category (emotional vs. temporal vs. spatial) and question type (literal vs inferred) varied, we converted scores to proportions and carried out a 2 (Group: TS vs. VI) x 3 (category: emotional vs. temporal vs. spatial) x 2 (type: literal vs. inference) analysis of variance with proportion scores on each question type as the dependent variable. Where the assumption of sphericity was violated Greenhouse–Geisser corrected degrees of freedom are reported. The ANOVA revealed a marginally significant main effect of group: $F(1,38) = 3.89$, $p=.056$, $\eta p2=.093$, a significant main effect of question type: $F(1,38) = 120.94$, $p <.001$, $\eta p2= .761$ (demonstrating higher scores on literal questions as opposed to inference questions), a significant main effect of category: *F*(1.72, 65.30) = 4.06, *p* =.027, ηp2=.096, a significant interaction between group and category: *F*(1.72, 65.30) =3.38, *p* =.047, ηp2=.082, a significant interaction between category and question type: *F*(1.96,74.39) =12.46, *p* <.001, ηp2=.247, but no significant interaction between group and question type: *F*(1,38) =.48, *p* =.49. The three way interaction between group, category and question type was not significant: *F*(1.96,74.39) =1.73, *p* =.19. The group by category interaction was explored with *t* tests, which revealed no significant difference between sighted and VI children in their understanding of emotional information: *t*(38) =1.20, *p* =.24, or temporal information: *t*(38) =1.44, *p* =.16, but a significant difference between the groups when answering questions about spatial information in a text: *t*(38) =2.35, *p* =.024 (see Figure 1).

In line with previous studies with partially-sighted children (e.g., Douglas et al., 2002; Douglas, et al., 2004; Hill et al., 2005) children with VIs demonstrate lower reading ages compared to their age-matched sighted peers. Therefore, to examine whether children with VI's specific deficit in answering questions about spatial information was still significant after accounting for differences in reading age (as derived from comprehension scores on the NARA II) we carried out a further ANCOVA with proportion scores on each question type as the dependent variable and with reading age as a covariate, which indicated that the significant two way interaction between group and category (emotional, spatial, temporal) was still significant even after accounting for reading age: *F*(2,74)=4.09, *p*=.021, ηp2 = .10, demonstrating that children with VIs still perform worse than TS children on spatial questions but not on emotional or temporal questions. The ANCOVA also revealed a three-way interaction between group, category and question type (literal vs inferred): *F*(2,74)=3.60, *p*=.032, ηp2=.09 that arises because once reading age is taken into account the children with

VIs have particular difficulties with the spatial inference questions in comparison to the TS children.

As studies with children with VIs typically have small sample sizes, we also conducted some comparable analyses using non-parametric tests, which make no assumptions about distributions. There was a significant difference between the TS and VI children when answering questions concerning spatial information (both literal and inferred): U = 113.50 N_1 = 20, N_2 = 20, p = .019, and still no significant differences between the groups in the understanding of temporal or emotional information: U = 147.50, N_1 = 20, N_2 = 20, p = .155, U = 156, N_1 = 20, N_2 = 20, p = .233 (respectively).

Discussion

The aim of this study was to compare TS and partially-sighted children on their understanding of emotional, temporal and spatial information in narratives (literal and inferred). The findings indicate that all children found literal questions easier to answer than inferred questions and this is in keeping with previous research with TS children (e.g., Cain & Oakhill, 1999). However, partially-sighted children exhibited a specific deficit in comparison to their same-aged TS peers in their ability to answer questions about spatial information in a text, especially when that information needed to be inferred and was not explicitly stated. This specific deficit was especially apparent when differences in reading comprehension skill had been taken into account. In contrast, there were no differences between TS and partially-sighted children in their ability to answer literal questions about temporal or emotional information in a text and no differences in their ability to infer such information either.

It may be that children with VI's lack of visual experience with spatial information underpins their specific deficit in answering questions about spatial information in narratives (a suggestion made by Wyver and colleagues). If the children with VIs in the current studies were asked questions about spatial information in the external environment, such as the location of objects or the distance between objects, we would expect them to have difficulties due to their lack of visual acuity. But, in many situations spatial information is not visible (e.g., a path bends out of our line of sight) and so an internal representation of spatial information is required such as remembering a specific route. Szubielska and Marek (2015) compared participants with varying degrees of VIs (congenitally blind, late blind and partially-sighted) in their ability to mentally resize objects that were both static and moving away: A skill that involves spatial awareness. Their findings indicated that both congenitally blind and partially-sighted participants are less able to use mental visualization strategies to make such estimations when compared to late blind participants, which they argue is due to lack of visual acuity early on in development that would not be applicable to the late blind group. There has also been some research examining congenitally blind individuals' mental representations of space (see Thinus-Blanc & Gaunet, 1997 for a review) but none that have examined this in partially-sighted participants. This study is unique in examining how children's text representations of emotional, temporal and spatial information are affected by visual impairment and our findings extend previous research by demonstrating the importance of visual experience when attempting to build an effective mental model of narratives during reading.

Unlike research with congenitally blind children, which has found no significant differences in local and global inference skills between them and TS children (e.g., Edmonds & Pring, 2006, Papastergiou & Pappas, 2019), we found significant differences in the ability to draw spatial inferences between partially-sighted children and TS participants. These differences in findings are likely due to variations in the materials used (i.e., local/global inferences vs. more targeted spatial/emotional/temporal inferences). Considering that Szubielska and Marek (2015) found deficits in the mentalising skill of both congenitally blind and partially-sighted individuals future research is needed to examine if the spatial inferencing skills of the congenitally blind are also impaired (there have been no studies to date examining this).

Neither did we find any deficits in partially-sighted children's ability to answer questions concerned with emotional information (explicit or inferred) when compared to their TS classmates and so the findings of a general pattern of delay in ToM development found with children with congenital visual impairments (Green, Pring, & Swettenham, 2004) did not have any bearing on the emotional inferencing skill of children with VIs in the current study. Although a ToM measure was not taken in the current study a more recent distinction in the literature has differentiated between cognitive and affective components of ToM (e.g., Shamay-Tsoory & Aharon-Peretz, 2007) - the former involves making inferences about beliefs and motivations, whereas affective ToM involves making inferences about emotions; research is needed to examine the relation between emotional inferencing when reading and affective ToM skills in partially-sighted children.

The lack of research concerned with the reading skills of partially-sighted children (and the similar scarcity of research into the reading skills of blind children) needs to be addressed so that intervention work can begin to support their reading development before they start secondary education (post 11-years of age in the UK). Although little is known about the underlying causes for the developmental lag in reading skill found in children with visual impairments (e.g., Douglas et al., 2002, 2004) it is important to develop a detailed profile of partially-sighted children's reading ability (at least comparable to the well-researched reading profile of their TS peers) as their documented lag in reading comprehension ability compared to TS children increases with age, and research indicates that in the UK children with VIs are already entering secondary education (11+ years) with lower attainment than other pupils (Chanfreau & Cebulla, 2009). This study represents a move in the direction of establishing a reading profile for this population of novice (7-11 years) readers, which could then be utilised by researchers examining how best to support reading in individuals with VIs, whether that be via the use of assistive technologies (e.g., Argyropoulos, Padeliadu, Avramidis, Tsiakali, & Nikolaraizi., 2019; Argyropoulos, Paveli, & Nikolaraizi, 2019), or other approaches such as repeated readings (that could emphasise spatial information in narratives) (e.g., Savaiano, & Hatton, 2013).

The findings demonstrate that in many ways partially-sighted children's inference skills are similar to those of TS children because their understanding of literal and inferred emotional and temporal information in narratives is not significantly different to that of their same-aged TS peers. However, their competence in certain aspects of inference-making skill and literal understanding may in a classroom setting mask their specific deficits in building a comprehensive mental model of a narrative that includes spatial information. The finding that partially-sighted children's mental model of a text is lacking details that are routinely represented in a TS reader's mental model has implications for the strategies used by educators of partially-sighted children when teaching reading. That is, children with VIs are more likely than their TS classmates to form incomplete mental models of narratives they read and this can lead them to draw incorrect inferences related to spatial information (with which they have limited visual experience). As such, intervention work is needed to address how their difficulties with representation of spatial information in narratives can be supported, which may in turn help boost their reading comprehension ability more generally and close the academic attainment gap that currently exists between novice readers who are TS and partially-sighted.

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Table 1: Characteristics of partially-sighted participants

Age of Diagnosis		Laterality		Cause of VI	
At birth, or <4 months	15	Bilateral	14	Strabismus	3
1-2 years	1	Unilateral	6	Nystagmus	3
3-4 years	3			Amblyopia	2
7 years	1			Cataracts	2
				Duane syndrome	1
				Colaboma	1
				Unknown origin	8
Total	20		20		20

Table 2: Characteristics and scores on each task (as a proportion), for each group

			Inference			Literal		
	CA (months)	RA	Spatial	Temp	Emot	Spatial	Temp	Emot
TS	106.30 (10.70)	114.55 (21.66)	.74 (.15)	.60 (.25)	.73 (.15)	.79 (.21)	.86 (.17)	.80 (.19)
VI	105.85 (11.16)	92.90 (15.61)	.55 (.22)	.54 (.22)	.68 (.21)	.66 (.20)	.73 (.24)	.71 (.16)

Standard deviations in brackets

TS – Typically sighted

VI – Visually impaired (the partially-sighted children)

CA – chronological age in months

RA – reading age in months, derived from comprehension scores on the NARA II

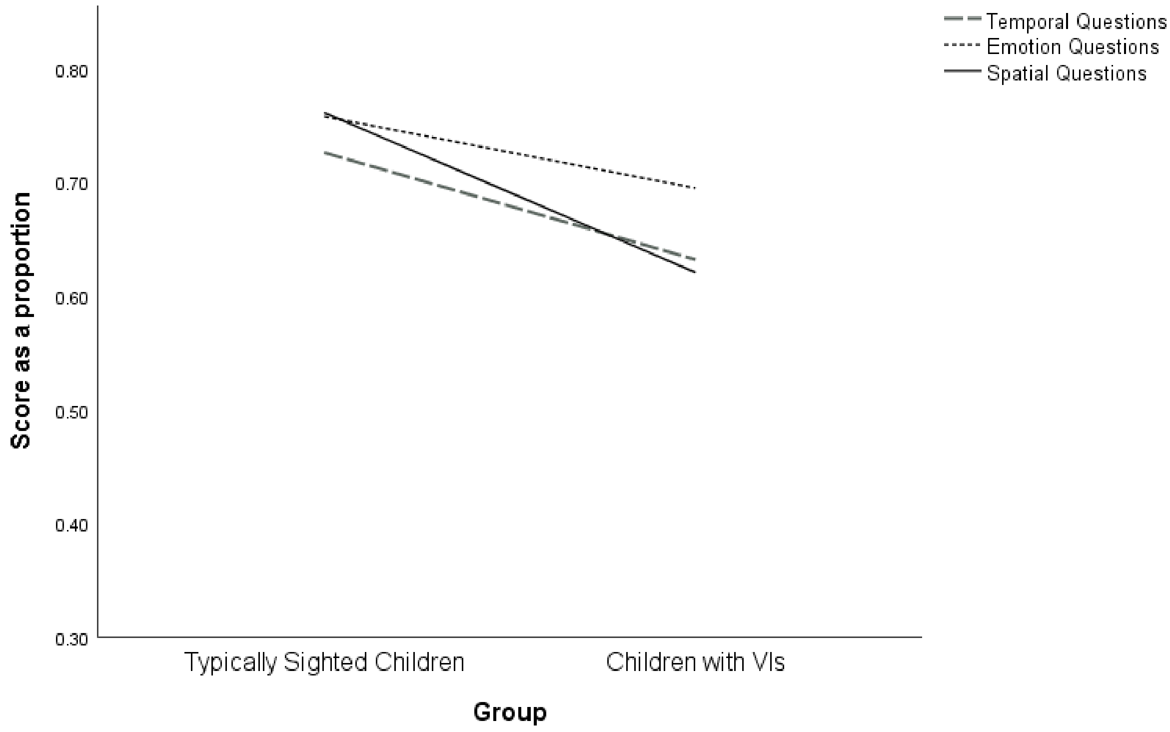

Figure 1: Proportion scores on temporal, emotion and spatial questions (collapsed across literal and inferred) for both groups

Appendix

Example story and accompanying marking schema

James

On Monday, James walked to school. He had to get there early to practice for the play.

James walked through the park, across the fields, and arrived at the hall. James was going to be an angel and he would hover above the stage. Everyone would think he could fly. He couldn't wait.

After practicing the play, James went to class for registration. It was quite a walk. When he got to class he realized he'd forgotten to take his bag with him when he left rehearsals. He quickly went back to get it. He ran through lots of corridors. He didn't want to get told off for running but he had to be quick or he would miss registration. He was relieved when he made it back to class in time.

After registration, they made decorations and went to the hall and brought in the tree. Everyone put lights on it, and the decorations were hung up so they looked like stars glittering in the sky. Everyone clapped because it was a job well done. They put the tree next to the stage.

In two days' time the parents would come and see the play. Everyone was so excited.

<u>Questions</u>

Temporal Literal: Why did James need to get to school early?

1 point:

To practise for the play.

Because he needed to practise for the play

He didn't want to miss the rehearsal because he was going to be an angel.

He had a rehearsal

0.5 points:

For the play

He was starring in the play.

To get to the play on time

0 point:

So he wouldn't miss registration

Temporal Inference: On what day were the parents going to come and see the play?

1 point:

Wednesday

0 point:

In 2 days time

Temporal Literal: What did they do after registration?

1 point:

They made decorations and then went to put them on the tree.

Made decorations for the school play

Went to the hall.

They went and sat down in the hall

Made decorations for the tree

They made a tree with decorations

They went to put the tree up

0 point:

Played games

Temporal Inference: Did it take long to get from the classroom back to the hall? How can you tell?

2 points:

Yes quite long because it says he had to run through corridors or he would be late

Yes he had to run through lots of corridors/ it said it was quite a walk

Yes it said it was a long journey

1 point:

Yes it took long time (but with no further explanation)

It was far (but with no further explanation)

0.5 point:

No, because James went quickly.

A few minutes because it doesn't take long to get through the corridors to the hall

He ran through corridors

0 point:

No it was quick

Emotion Inference: How did James feel about being in the play? How can you tell?

2 points:

Happy because he wants to get to the rehearsal on time.

He was excited because it says 'he couldn't wait'

Excited because he would hover above everyone and they would think he was flying

Happy because he got to school early, and was excited and wanted to get to school.

1 point:

Excited because he wants to be in the play

0.5 point:

Happy (with no explanation)

Happy and nervous (with no further explanation)

Excited (no explanation)

Emotion Literal: How did everyone feel at the end of the story?

1 point:

Excited

Happy

Proud

Emotion Inference: How did James feel when he was running through the corridors? How can you tell?

2 points (includes emotion + being' told off'):

A bit scared because he didn't want to miss registration and he didn't want to get told off.

Nervous he would get told off

Really daring to do it as not allowed to run.

Relieved he didn't get caught

1 point (does not include 'told off'):

Worried that he wouldn't make it back in class in time.

Worried because he would be late for registration

0.5 point (emotion, but with no explanation):

Upset

Nervous

0 points:

Happy

Emotion Literal: How did James feel when he got back to the classroom after getting his bag?

1 point:

Relieved

Amazed he didn’t miss registration

0.5 point:

Happy

Spatial Literal: Which was nearer to the hall – the fields or the park?

1 point:

The fields

Spatial Inference: Where had James left his bag?

1 point:

In the hall where he was rehearsing.

Back in the hall

In the hall

Inside the rehearsal room.

At the rehearsal.

Spatial Literal: Where did they put the tree?

1 point:

In the hall by the stage

In the hall next to the stage

0.5 point:

Next to the stage

In the hall.

Side of stage.

Spatial Inference: Where were the decorations hung in the hall? How can you tell?

2 points:

Off the ceiling so they looked like stars glittering in the sky

From the roof because it says they looked like stars in the sky.

1 point:

On the ceiling (but no explanation)

0 points:

On the tree and the walls

On the tree and wall because that's how I do my place

On the tree

Around the room.

At the back