Use of text message abbreviations and literacy skills in children with dyslexia

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SHORT REPORT

Use of Text Message Abbreviations and Literacy Skills in Children with Dyslexia

Abstract

This small-scale study compared 10 to 13-year-old dyslexic children's use of text message abbreviations to that of reading-age and chronological-age matched controls. There were no significant difference in the proportion of textisms used between the dyslexic children and the two control groups, although a preference for non-phonetic text abbreviations was observed in the dyslexic group. Unlike the controls, there was little evidence of an association between phonological awareness and textism use in children with dyslexia. These results are discussed in relation to strategy use by dyslexic children when decoding text.

Introduction

The increase in text messaging has raised concerns about the demise of the English language (Thurlow, 2006), as texting disregards standard written conventions in favour of alternative spellings known as 'textisms'. However, recent research has found positive relationships between knowledge of textisms and children's literacy attainment (Plester, Wood & Bell, 2008; Plester, Wood & Joshi, 2009). A recent longitudinal study has shown that textism use at the beginning of an academic year can predict literacy skills at the end of the year, but literacy skills do not predict textism use (Wood, Plester & Bowyer, 2009). The present study therefore looked at the use of textisms amongst children with dyslexia and explored the relationship between textism use and literacy skills in comparison to matched controls.

Children engage with print daily outside of classroom settings and such activities include computer-mediated-communication, such as emailing, MSN messaging, the use of social networking sites, and texting. Each of these has its own written conventions, which differ from those of formal literacy. For example, Thurlow (2003) identified that young people's text abbreviations include *shortenings* (Uni, poss), *contractions* (gd, nxt), *G clippings* (goin, borin), *other clippings* (hav, wher), *acronyms* (BBC), *initialisms* (lmao), *letter/number homophones* (gr8), *non-conventional spellings* (foned, nite), *symbols* (@, :-)) and *accent stylisations* (wanna, wivout). When we look at these forms, we can see that many require some degree of phonological awareness and understanding of phoneme-grapheme correspondences to recode / decode speech in this way. Plester and colleagues (Plester, et al., 2008, 2009; Wood et al., 2009) found that the positive associations between use of textisms and literacy were mediated by children's phonological awareness, but textism use was still able to account for a significant amount of additional variance in the children's

literacy skills. The results of these studies suggest that textism use contributes to literacy in a way that is not entirely explained by general ability or phonological skills. Plester et al. (2009) speculated that this contribution might be due to the value added by exposure to print via texting, or the motivational benefits provided by playful language use.

Children with dyslexia can withdraw from the literacy arena altogether due to lack of confidence. Yet, when encouraged to engage with print in a way that allows them to play with language without fear of failure, they willingly re-engage (e.g. Carter, 2001). It therefore seems possible that texting may offer dyslexic children a route into developing literacy skills which is non-threatening. The question remains, however, do children with dyslexia demonstrate the same engagement with textisms that their peers do? And, do we see the same positive associations between textism use and literacy that have been observed previously in typically-developing children?

Method

Participants

An opportunity sample of 65 children participated in this study. There were 13 participants in the group with dyslexia; these were children who had been identified by a Special Educational Needs Coordinator or an Educational Psychologist as having dyslexia. All these children received additional help at school. The group consisted of five females and eight males with a mean age of 11.8 years (*SD* = 13.8 months).

Twenty-six typically-developing participants were recruited who were matched on chronological age and verbal IQ to the children with dyslexia. There were eight males and 18 females with a mean age of 11.4 years (*SD* = 8.6 months). A further 26 children were matched to the dyslexic children on reading age and verbal

IQ (15 males and 11 females with a mean age of 9.8 years, *SD* = 11.9 months). All children in the study were recruited from schools in the West Midlands.

The group with dyslexia received their first mobile phone between the ages of 6 and 11 years, with 46% getting their first mobile between 8 and 9 years. This was in line with the controls, who reported receiving their first mobile phones between 5 and 12 years, with 56% getting their first mobile between 8 and 9 years. However, the control group's main use of their mobile was for texting (57%), whereas the group with dyslexia used their phones mainly for calls (38%), although texting was the secondary function (31%). The number of children in the dyslexia group who used predictive text was less than that in the control group, with 54% of the group with dyslexia never using predictive text compared to 43% of the control group.

Assessments

Verbal IQ was assessed using the *Wechsler Abbreviated Scales of Intelligence* (WASI; Wechsler, 1999). Two subtests were taken from the *Phonological Assessment Battery* (PhAB; Frederickson, Frith & Reason 1997) to assess phonological and phoneme-grapheme conversion skills: the rhyme detection and non-word reading subtests.

Participants were also asked to produce copies of the text messages sent over a weekend (NB. schools did not permit children to bring phones to school). To ascertain authenticity, the researcher went through the text messages with each child and discussed them, including the meaning of the textisms used. The number of textisms used by participants in their messages was recorded, and they were classified using the same categorisation system used previously by Plester et al. (2009). The ratio of textisms to total number of words used in the messages was calculated, with '0' indicating no use of textisms, and '1' indicating use of nothing but textisms.

A measure of the children's reading ages was obtained primarily for the purposes of enabling a reading age matched control group to be included in the study. The children with dyslexia were assessed by their schools using either the *Access Reading Test* (McCarty & Crumpler, 2006) or the *Group Reading Test* (Hagues & Burley, 2000), whereas the control children completed the *BAS II* word reading subtest (Elliott, Smith & McCulloch, 1996). The above tests measure word reading ability, although the task format varied as the dyslexic children's reading assessments were group administered, and the BAS II was individually administered. Although the variation in reading assessment is far from ideal, we did not wish to assess the reading ability of the dyslexic children if recent standardised reading data were available from the school, to keep testing to a minimum for these children.

Results

Descriptive Statistics

Table 1 shows a summary of the results for each group of children on each of the main measures taken. The mean reading ages show that the group with dyslexia were performing well below the reading ages expected for their chronological age.

Table 1 about here

The mean ratio of text abbreviation use amongst the group with dyslexia (.34) was in line with that reported previously for typically-developing children (Plester, Wood & Joshi 2009). The CA group mean was slightly higher (.41). The reading age matched group showed a lower ratio of textism use (.27).

Violations of normality were found in the data so, as a consequence of this and the restricted sample size, non-parametric tests are presented here. As the present study was only concerned with whether there were significant differences between the dyslexia group and the two control groups, a priori Mann-Whitney U tests were

employed, using a Bonferroni corrected *p* value of $p<.025$ (two-tailed) to establish statistical significance. There was no significant difference in textism ratio between the group with dyslexia and the CA group, $U = 149.0$, $p = .55$, $r=.10$, and between the dyslexic children and their reading age matched controls, $U = 104.5$, $p = .054$, $r=.31$.

To investigate the relationships between literacy attainment and the use of textisms within each group, Spearman correlation coefficients were calculated. To guard against Type 1 error, a level of $p<.01$ (two-tailed) was used to demonstrate statistical significance. We first examined the relationship between literacy attainment and textism ratio amongst the dyslexic children. There was no significant relationship between reading age and text ratio ($r_s=.176$, $p=.564$) or between textism ratio and a composite phonological awareness measure (in which rhyme and non-word reading were converted to z scores and then added together), $r_s=.561$, $p=.046$. Similarly, correlations between rhyme, non-word reading and textism use failed to reach statistical significance ($r_s=.427$, $p=.145$ and $r_s=306$, $p=.309$, respectively). In contrast, a positive correlation was found between textism use and reading age within the typically-developing children (NB. For this analysis the two control groups were collapsed), $r_s=.375$, $p =.006$. There was also a positive association found between composite phonological awareness and textism use, $r_s=.363$, $p=.008$.

Figure 1 illustrates the distribution of the different types of textism that were used within each reading group. Although the three groups look broadly similar in terms of the relative proportions of textism types used, the children with dyslexia show higher usage of *initialisms* and *symbols*, which are non-phonetic forms of abbreviation.

Figure 1 about here.

Spearman correlation coefficients were used to examine the relationships between specific types of text abbreviation and literacy skills, within the dyslexia group and amongst the typically-developing children. Table 2 shows the correlation coefficients for the group with dyslexia. Significant positive correlations were found between most literacy measures and use of *other clippings*. However, there were no other significant relationships observed.

Table 2 about here.

Table 3 shows the correlations between textism use and the literacy measures amongst the typically-developing children (i.e. the combined CA and RA matched group). Significant positive correlations are observed between the various literacy measures and forms of textism. No relationships are observed between rhyme detection scores and textism types, although this is attributable to a ceiling effect on this measure for the older typically-developing children.

Table 3 about here.

Discussion

Children with dyslexia do participate in text messaging, and their textism use is similar to that of their peers, although they preferred to use non-phonetic forms more than the typically-developing children did. Moreover, there was little evidence of a positive relationship between phonological awareness and textism use for this group. Only one specific form of textism, *other clippings*, was found to be associated with literacy measures in the dyslexia group. Its nature – the omission of terminal letters that are phonologically redundant – resonates with previous observations that individuals with dyslexia are relatively inattentive to the ends of visual stimuli (King, Wood & Faulkner, 2007). It should be noted, that some of the dyslexic children's textisms could reflect genuine attempts to spell words correctly. It is also noted that

the small sample of dyslexic children in this study means that these results are tentative and require replication.

The relative lack of an association between literacy skills and textism use in the group with dyslexia may be indicative of the absence of a phonic approach to decoding text amongst this group given the previous research in this area which has shown that much of the relationship between textism use and literacy is explained by phonological awareness (Plester et al., 2008, 2009). However, the question of whether text messaging based exercises might be effective in fostering phonological awareness in this group remains, and research is needed that looks at the effectiveness of paper-based or technologically-mediated exercises involving textism creation and use. If done sensitively, such activity could build upon behaviour that is already part of these children's voluntary engagement with text.

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Table 1

Summary statistics for all measures by group.

Measure	*Group with Dyslexia*				*CA Match Group*				*RA Match Group*			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
VIQ	96.3	15.0	76	129	98.00	12.4	78	121	91.2	11.3	70	117
R. Age	110.0	24.5	83	165	154.4	26.9	117	207	110.5	24.2	79	171
Rhyme	15.8	3.9	7	19	19.0	3.0	7	21	16.2	5.1	5	21
NonWord	13.3	4.1	7	20	17.9	2.3	12	20	13.9	5.0	3	20
Textisms	0.4	0.2	0.1	0.6	0.4	0.2	0	0.8	0.3	0.2	0	0.6

Key: *VIQ* - Verbal IQ*; R.Age* - Reading Age (months); *Rhyme* – Rhyme Detection*;* *Nonword* –Nonword Reading*; Textisms* – Textism Ratio.

Table 2

Spearman correlation coefficients between textism ratio and literacy measures for the dyslexic children.

	Reading age	Phonological Composite Score	Rhyme Detection	Nonword Reading
Shortenings	.116	-.155	-.119	-.275
Contractions	.179	.302	.95	.267
G Clippings	.288	.520	.152	.452
Other Clippings	.699*	.677*	.611	.707*
Symbols	-.400	-.175	-.114	-.208
Initialisms	-.003	-.212	-.018	-.303
Homophones	-.477	.064	.308	-.331
Non Conventional	-.054	.242	.016	.203
Accent Stylisation	.325	.461	.334	.406
Missing ‘	.507	.385	.148	.484

* significant at the 0.01 level (2-tailed)

Table 3

Spearman correlation coefficients between textism ratio and literacy measures for the typically-developing children.

	Reading age	Phonological Composite Score	Rhyme Detection	Nonword Reading
Shortenings	.242	.225	.124	.198
Contractions	.398*	.239	.102	.303
G Clippings	.321	.247	-.004	.384*
Other Clippings	.127	.241	.109	.225
Symbols	.265	.184	.186	.151
Initialisms	.361*	.355*	.187	.406*
Homophones	.290	.010	-.130	.151
Non Conventional	.139	.051	-.007	.095
Accent Stylisation	.465*	.439*	.218	.497*
Missing ‘	.333	.352	.242	.291

* significant at the 0.01 level (2-tailed)

Figure 1

Children's Mean Use of Textism Forms Expressed as a Percentage of their Total Textism Use (SD represented by Error Bars).