'What does an *O* say when there's no *E* at the end?' Parents' reading-related knowledge and feedback during child-to-parent reading

Aviva Segal

Centre for Research on Families and Children, McGill University, Montréal, Québec, Canada

Aviva Segal and Sandra Martin-Chang

Department of Education, Concordia University, Montréal, Québec, Canada

Background: Although a large body of research has investigated teachers' reading-related knowledge and associated pedagogical practices, comparatively little is known about these factors in parents. Therefore, the present study examined the association between parental reading-related knowledge and feedback during child-to-parent reading.
Methods: Seventy parents completed a reading-related knowledge questionnaire (phonological segmentation, knowledge of written syllable patterns, identification of regular and irregular word spellings) while their 6 and 7-year-old children were administered the Peabody Picture Vocabulary Test and the reading subtest of the Wide Range Achievement Test–Fourth Edition. Based on children's Wide Range Achievement Test–Fourth Edition reading performances, they were assigned one of five adapted passages from the Gray Oral Reading Test–Fifth Edition to read aloud to their parents; parents were asked to help as they normally would. Reading sessions were videotaped; the content was transcribed and coded for evidence of verbal and nonverbal parental feedback (evaluative feedback: praise and criticism; miscue feedback: graphophonemic, context cues, try again, terminal and ignoring miscues).
Results: Consistent with the teacher and parent literature, reading-related knowledge was positively associated with children's reading scores. Parents' reading-related knowledge additionally accounted for unique variance in praise and graphophonemic feedback during child-to-parent reading beyond the variance already explained by children's reading scores.
Conclusions: These findings suggest that even after accounting for children's reading abilities, reading-related knowledge contributes to a positive affective atmosphere for teaching key literacy skills to young readers. Implications are discussed in terms of enhancing parents' reading-related knowledge and associated practices in hopes of positively contributing to children's literacy outcomes.

Keywords: reading-related knowledge, home literacy practices, joint reading, reading feedback

Highlights

What is already known about this topic

- Teachers' reading-related knowledge significantly predicts the instruction they provide and students' reading development.
- Consistent with the teacher research, parents' reading-related knowledge is associated with children's reading performances.
- Parents tend to be quite positive and not critical when jointly reading with their children (Martin-Chang & Gould, 2012).

What this paper adds

- Here, we see the contribution of parents' feedback practices and their associations with parents' reading-related knowledge and children's reading scores.
- Parents' reading-related knowledge contributes to the affective atmosphere of joint reading.
- Parents' reading-related knowledge accounts for more attempts at making explicit grapheme–phoneme connections (reading instruction) when jointly reading with their emergent readers.

Implications for theory, policy or practice

- To direct parents towards available websites to improve their reading-related knowledge.
- To develop parents' and teachers' reading-related knowledge through joint parent/teacher learning evenings and other such efforts.
- Much of the initiatives to date have spoken to the importance of reading to children; however, the contributions of children reading to their parents need further attention.

It is now well established that even proficient adult readers struggle when asked to manipulate small segments of language (e.g., Joshi et al., 2009; Ladd, Martin-Chang, & Levesque, 2011; Moats & Foorman, 2003; Spear-Swerling & Brucker, 2003). For instance, when asked to count phonemes or identify irregularly spelled words, it is not uncommon for parents (Ladd et al., 2011) and teachers to perform quite poorly (Bos, Mather, Dickson, Podhajski, & Chard, 2001; Cunningham, Zibulsky, Stanovich, & Stanovich, 2009; Ladd et al., 2011; Moats, 1999). Despite the challenges adults face, the last three decades of research has highlighted the important contribution of content knowledge when teaching children to read (e.g., Moats & Foorman, 2003; Piasta, Connor, Fishman, & Morrison, 2009; Shulman, 1987). Here, we observed parents helping their children read and examined their behaviours in light of three constituents of parental reading-related knowledge, specifically, parents' phonological awareness, recognition of written syllable patterns and identification of irregularly spelled words.

Parents as teachers

According to Bronfenbrenner and Morris (2006) as well as Vygotsky (1978), children are greatly impacted by their immediate environments, including interactions with their

parents. Looking at home instruction specifically, parents may take on the role of their children's first literacy teachers (Hiebert & Adams, 1987); when they do, parents often provide a significant amount of feedback in line with children's skills (Evans, Barraball, & Eberle, 1998).

Consistent with a guided participation framework (Rogoff, 1998), interactions between parents and children tend to be collaborative, involving knowledge transfer and engagement from both parties (Martin-Chang & Gould, 2012). When children make mistakes while reading, parents can provide feedback that is either sustaining (e.g., try again, graphophonemic and context cues; cf. Evans et al., 1998) or terminal (e.g., parents providing misread words; Evans et al., 1998). Martin-Chang and Gould (2012) reported that parents' graphophonemic feedback during child-to-parent reading was positively associated with both praise and children's reading engagement. Therefore, parents' increased attentiveness and active involvement in mediating their children's reading appears to be enticing to young children. This is particularly noteworthy because the frequency of child-to-adult reading in the home is a stronger predictor of children's reading ability compared with the frequency of adult-to-child storybook reading (Hewison & Tizard, 1980; Tizard, Schofield, & Hewison, 1982).

Reading-related knowledge

Phonological awareness encompasses an understanding that speech can be broken down into smaller units of sound (Hulme, Bowyer-Crane, Carroll, Duff, & Snowling, 2012). Early on, preschoolers become aware of larger units of sound, such as rhymes and syllables, and later engage with individual speech sounds (phonemes) in words. Phonemic awareness is particularly important as it facilitates hearing speech sounds, which eventually leads to matching phonemes with their corresponding graphemes. As such, children's early phonemic awareness represents one of the strongest predictors of their later reading and spelling skills (Cunningham & O'Donnell, 2015; Hulme, Nash, Gooch, Lervåg, & Snowling, 2015; Savage, Carless, & Stuart, 2003).

The significance of phonological awareness, and phonemic awareness specifically, is recognised by literacy initiatives created for both parents and teachers. For example, *Reading Rockets*, a website that provides strategies and activities to be used in the home and the classroom, has an entire section dedicated to helping children play with the sounds of language (National Institute of Child Health and Human Development, n.d.). However, even with these efforts in place (e.g., Reading & Van Deuren, 2007; Savage et al., 2003), dividing words into phonemes remains difficult for many parents and teachers (Joshi et al., 2009; Ladd et al., 2011; McCutchen & Berninger, 1999; Moats, 1999; Spear-Swerling & Brucker, 2003). In fact, it has long been recognised that individual speech sounds in words are hard to hear because they occur so quickly in running speech and are often co-articulated (Bentin, 1992; Liberman, Shankweiler, Fischer, & Carter, 1974).

A second form of reading-related knowledge involves the ability to recognise the six most common written syllable patterns (closed, open, vowel-consonant-e, vowel teams, r-controlled, final stable; Appendix A), which can assist children in reading simple and more complex words (Foorman et al., 2016; Moats & Foorman, 2003; Spear-Swerling & Brucker, 2003). Teaching children to recognise letter patterns in words helps them predict associated vowel sounds, which in turn, facilitates accurate word reading. The National Centre for Education Evaluation (Foorman et al., 2016) stresses the importance of

instructing students in common written syllable patterns. To support teachers, the National Centre for Education Evaluation provided activities to introduce and practice syllable pattern identification (e.g., Foorman et al., 2016; Reading Rockets, 2008). Yet, once again, despite such efforts, studies on teacher knowledge indicate that this information is not widely known by practitioners (e.g., Cunningham & O'Donnell, 2015; Moats & Foorman, 2003; Spear-Swerling & Brucker, 2003).

When reading words with regular spellings, knowledge of written syllable patterns is clearly an asset. However, in actuality, many English words cannot be 'sounded out' in their entirety (McCutchen et al., 2002). For example, the word 'give' is often encountered in print. It resembles a vowel-consonant-e syllable pattern (such as 'hive'), but in 'give', the vowel sound is lax like in 'gig'. Likewise, the word 'said' meets the criterion of a vowel team; however, the vowel sound heard, is like in 'pet'. To help children with irregular words, programmes such as *Jolly Phonics* (Lloyd, 1992) present these 'tricky' words separately from words with regular spellings. Other approaches draw upon making grapheme–phoneme connections through 'pronouncing for spelling'. In those cases, the word 'Wednesday' can be presented orally as /wed-/nes/-/day/ for children to make the letter-to-sound correspondences. In addition, teachers can draw attention to the familiar components of the word, such as the small word 'wed' in 'Wednesday' (Moats, 2005; Ocal & Ehri, 2017). However, classroom observations indicate that teachers sometimes fail to identify irregular spellings in common words like 'give' and 'said' because the spellings have become automatic (e.g., Cunningham & O'Donnell, 2015). In such cases, teachers may erroneously direct students to sound out irregular words, which can result in confusion and frustration on behalf of the students (Piasta et al., 2009).

Parents' reading-related knowledge. Ladd et al. (2011) were the first to study parents' reading-related knowledge and its association with children's reading skills. Working with a sample of 70 children in Kindergarten and Grade 1, Ladd and colleagues found that parents' reading-related knowledge was significantly associated with children's performances in letter–word and phonemic awareness tasks but not with their mathematics or vocabulary skills; these findings support a domain-specific contribution of parents' reading-related knowledge (specific to parents' knowledge of phonics and phonemic awareness) to the same skills in their children.

In 2018, Segal and Martin-Chang extended this research to study the relations between parental reading-related knowledge and children's reading skills between Kindergarten and Grade 1 (Time 1, $N = 42$; Time 2, $N = 39$). Here, they noted that all parent variables, including the ability to identify irregular words, recognise storybook titles, and detect real authors, significantly accounted for unique variance in children's reading skills in Kindergarten. However, among all of these parent variables, only reading-related knowledge continued to account for unique variance in the reading skills of their children once they entered Grade 1. Thus, the contribution of reading-related knowledge to children's reading appears to remain robust at least during the early years of schooling.

Although both studies (Ladd et al., 2011; Segal & Martin-Chang, 2018) noted significant links between parental reading-related knowledge and children's reading abilities, neither offered insight into how parents with higher or lower reading-related knowledge interacted with their children. Thus, the impetus for the present investigation was to bridge this gap in the literature by observing parents' feedback when they helped their children's read.

The present study

In this study, parents were given a reading-related knowledge questionnaire that measured phoneme counting, syllable counting, syllable classification, and identification of irregularly spelled words (cf. Ladd et al., 2011; Segal & Martin-Chang, 2018). A novel component of the present investigation involved observations of parents and their children during a reading session. These interactions were later transcribed, and parents' verbal and nonverbal feedback were coded. Two types of parental responses were investigated: evaluative feedback, which involved parents' appraisal of children's performances throughout the session (praise and criticism; adapted from Martin-Chang & Gould, 2012), and miscue feedback, which encompassed parents' responses to their children's reading mistakes and hesitations (graphophonemic, context cues, try again, terminal feedback and ignoring miscues; adapted from Evans et al., 1998; Table 1). Both verbal utterances and nonverbal feedback (e.g., facial expressions, eye contact and hand gestures) were coded.

Table 1. Types of parental feedback, definitions and examples (adapted from Martin-Chang & Gould, 2012; Cunningham et al., 2004; Evans et al., 1998).

Types	Definitions	Verbal examples	Nonverbal examples
Evaluative			
Praise	Providing praise based on performance and positive actions.	'You are so good!' 'Really good reading, honey!'	Gives a thumb's up. Nods.
Criticism	Providing reprimanding comments and actions.	'Stop it!' 'It's not "gone fishing!"'	Shakes head. Closes eyes.
Miscue			
Graphophonemic	Drawing upon letter and sound combinations in words.	'When there's two vowels, the first one is the sound that you take.' 'Do you remember what the C,H makes?'	Points to letters. Covers parts of words.
Context clue	Drawing on information outside the text as a clue for word recognition.	'If it's not in, it's [out] …' 'Remember you read that word before?'	Points to a picture to help the child read.
Try again	Prompting the child to try to read a word again without specific guidance or correction.	'Say this one again?' 'Mmm, maybe try that word again.'	Taps on a misread word.
Terminal	Providing the word, thereby stopping the opportunity for subsequent attempts at decoding; immediately following miscues or after failure of other strategies.	'[The word is] "wide-eyed" '. 'It's "ride".'	Points to the word that is being relayed.
Ignoring miscues	Parent does not respond to a reading miscue.	No verbal response to a reading miscue.	No actions to note that a reading miscue took place.

Drawing upon the parent feedback literature (Evans et al., 1998; Martin-Chang & Gould, 2012), we made three predictions regarding how parental reading-related knowledge and feedback might be linked. First, we suspected that parents with higher reading-related knowledge would be more sensitive to the challenges that novice readers face and, as such, would provide more praise and less criticism during child-to-parent reading. Second, based on the linguistic awareness that constitutes reading-related knowledge, we expected parents with higher reading-related knowledge to provide more graphophonemic feedback than parents who had lower reading-related knowledge. Third, we expected parents with higher reading-related knowledge to sustain the reading interactions by providing more feedback that encouraged their children to 'try again' and less terminal feedback where the parent supplied the correct word.

Methods

Participants

After receiving ethical approval, parents were recruited from local schools in Quebec. A criterion for participation involved English being one of the languages primarily spoken in the home. A sample of 70 middle-upper class parents ($M_{\text{income range}}$ = $90,001) agreed to complete a series of activities. The median provincial income reported by Statistics Canada (2015) is $75,530. On average, children were 6 years and 8 months old (standard deviation, SD = 7.7 months); 29 were girls, and 41 were boys; 46 had completed Kindergarten, and 24 had completed Grade 1 at the time of testing. Descriptive analysis of the Peabody Picture Vocabulary Test–Fourth Edition (PPVT-4; standardised score) showed that children were performing slightly above average for receptive vocabulary (M = 109; 90% confidence interval 103–115; range = 82–139; SD = 12.70), reflecting a Grade 1 spring (third trimester) grade equivalent.

The mean parent age was 39 years old (SD = 57 months); 61 of the parents were mothers, and 9 were fathers. Most of the parents were in a committed relationship (married, 82.9%; common law, 10.0%); the rest were either single (1.4%), separated (1.4%) or divorced (2.9%).[1] Overall, the parent sample was well educated, with 12.9% having completed high school or some university, 41.4% having completed an undergraduate degree, 38.6% having completed a master's degree and 7.2% having completed a doctoral degree.

Materials

Recording devices. Two recording devices were used to capture verbal and nonverbal dyadic exchanges. The first was a MacBook Air (13-inch computer); the second was a Sony HDR-XR350 Handycam.

Children's materials

Vocabulary. The PPVT-4 (Dunn & Dunn, 2007) was used as a descriptive measure for children's receptive vocabulary. Children were shown four illustrations and asked to identify which picture matched a spoken word. The activity is discontinued when the child fails to identify eight or more words correctly in a set. This measure has demonstrated high

split-half reliability (α = .94) and test–retest reliability (α = .92–.96), with additional evidence of both construct and content validity (Dunn & Dunn, 2007).

Reading. The Wide Range Achievement Test–Fourth Edition (WRAT 4; Wilkinson & Robertson, 2006) is a norm-referenced test that measures basic academic skills, including word reading. The word reading task involves letter and word decoding, starting with letter identification and proceeding to word recognition tasks. Testing is discontinued when a child responds incorrectly to 10 consecutive items. Wilkinson and Robertson (2006) reported a high internal consistency of .96 for Kindergarten and Grade 1.

Joint reading. The Gray Oral Reading Test–Fifth Edition test (GORT-5; Wiederholt & Bryant, 2012) was created as a screening tool for oral reading fluency. However, within the scope of this study, it was used as a text that the children read aloud to their parents. Here, the first five developmentally sequenced passages were adapted into picture books. The pictures appeared at the top of each page, with the associated text beneath them; pictures were related to but not predictive of the text (Appendix B). Book assignments were based on providing texts that were above independent WRAT reading skills to increase the likelihood of parent feedback on reading errors and requests for help. Preestablished cut-offs for GORT book assignments were formulated by the first author based on children's potential scores on the WRAT measure. First, children with a WRAT reading score of 15 or less were assigned Book 1. A score of ≤15 reflects an ability to name letters but not to decode words. Book 5 was assigned based on an estimated above Grade 2 level raw score of ≥31 on the WRAT reading measure. Books 2, 3 and 4 were assigned based on 5-point differences on the WRAT measure, that is, Book 2 (WRAT scores between 16 and 20), Book 3 (WRAT scores between 21 and 25) and Book 4 (WRAT scores between 26 and 30).

Parents' materials

Parents completed a questionnaire, which included demographic questions and a short reading-related knowledge questionnaire (adapted from Cunningham, Perry, Stanovich, & Stanovich, 2004; Moats & Foorman, 2003; Spear-Swerling & Brucker, 2003; Appendix C).

Reading-related knowledge. Alternate form reliability for the phonemic segmentation task was .78 (as reported in Spear-Swerling & Brucker, 2004); syllabic segmentation was measured using a reliable instrument provided in the T-TESS Texas Teacher Evaluation and Support System: Teacher Handbook (Texas Education Agency, 2015). Because the sample was comprised of parents and not teachers, technical questions such as those involving definitions (e.g., Joshi et al., 2009) were excluded. Correct responses were given a score of 1, and incorrect responses were given a score of 0.

The syllable classification task involved four monosyllabic words. Parents were asked to select which of four written syllable patterns, commonly presented to younger readers, the words represented (closed, open, vowel-consonant-e and vowel teams), and if unsure, to check an 'I don't know' option. Previous syllable classification tasks have involved either multiple choice questions or nonsense words (Moats & Foorman, 2003; Spear-Swerling & Brucker, 2003); to appear more authentic to parents, real words were provided that

represented each of the patterns. Correct responses were given a score of 1; incorrect and 'I do not know' responses were given a score of 0.

The last task involved identification of regular and irregular word spellings (adapted from Cunningham et al., 2004). Parents were presented with 10 irregularly spelled words that were intermixed with 26 phonetically regular words. They were asked to circle those that were irregularly spelled, reflecting nonstandard correspondences between letters and letter patterns to sounds (Cunningham & O'Donnell, 2015; Reading Rockets, 2008) and to leave blank regularly spelled words and words they were unsure of. Correctly identified irregularly spelled words were given a score of 1. Cunningham et al. (2004) reported a Cronbach's alpha of .77 for this measure with their teacher samples. In a previous study (Segal & Martin-Chang, 2018), we analysed the reliability of the task with parents. Strong split-half reliability was found among parents' performances in both sections of the split measure (Spearman–Brown coefficient = .63). A composite reading-related knowledge score was calculated by summing the correct number of responses out of a total of 39 for each parent participant and used in subsequent analyses.

Procedure

Parents who were interested in participating in the study contacted the primary investigator. They were informed that interactions with their children would be videotaped and were assured that recordings would be stored in locked cabinets in the literacy lab, separate from any of their identifiable data. Parents were given the option of meeting at the university (with paid parking and transit costs) or in their homes. Sessions were scheduled throughout the late summer and early fall. The testing took place in one session at a convenient time for the family.

Before the session started, written consent was obtained from the parent and verbal assent was obtained from the child. Next, the parent and child each completed separate tasks. The PPVT-4 and the reading subtest of the WRAT 4 were administered to the child by the primary investigator, while the parent completed the questionnaire in the presence of a research assistant.

During a short break, the investigator calculated the child's WRAT 4 reading score out of the child's view; scores were then used to allocate GORT books based on preestablished criteria (Table 2). An adapted text from the GORT-5 was then chosen based on preestablished criteria pertaining to children's reading scores (Table 1). Children were asked to read the books out loud, and parents were asked to help as they usually would.

Table 2. Information pertaining to the GORT books (Wiederholt & Bryant, 2012).

	Book 1	Book 2	Book 3	Book 4	Book 5
Number of words per book	21	40	53	82	100
WRAT 4 reading score classifications	0–15	16–20	21–25	26–30	31+
Number of children who received each book (based on WRAT 4 reading scores; $N = 70$)	21	12	8	7	22
Number of Kindergarten children who received each book (based on WRAT 4 reading scores; $n = 46$)	19	11	4	5	7
Number of Grade 1 children who received each book (based on WRAT 4 reading scores; $n = 24$)	2	1	4	2	15

Note: GORT, Gray Oral Reading Test; WRAT 4, Wide Range Achievement Test–Fourth Edition.

The child-to-parent reading segment was videotaped from two angles. The laptop camera was positioned approximately 3 feet in front of the dyad to record verbal and nonverbal interpersonal exchanges (e.g., looking at one another, smiling). The laptop was selected over a video camera because laptops are commonly found in homes. The screen was turned off so that the dyads could not view themselves. The video camera was placed out of view, on a raised tripod behind the parent and child. This positioning allowed us to record nonverbal reference to text (e.g., pointing to words or letter combinations). At the end of the session, children were given a book of their choice to thank them for their participation.

Data coding

Recordings were transferred onto ExpressScribe Transcription software version 5.88 by the first author. Verbal and nonverbal transcriptions occurred over three passes. First, recordings from the 'enface' laptop video camera were uploaded, and verbal exchanges were transcribed verbatim. In cases of inaudible verbal exchanges, audio tracks from the camcorder were examined as well. Second, the laptop recordings were reviewed an additional time to transcribe nonverbal interpersonal exchanges. Third, the over-the-shoulder Handycam recordings were uploaded, and nonverbal text-based interactions were added to the transcriptions.

The complete transcriptions, including all verbal and nonverbal interactions, were coded using a predetermined coding scheme adapted from Evans et al. (1998) and Martin-Chang and Gould (2012). The coding scheme was composed of two verbal feedback subcategories: evaluative feedback (praise and criticism) and miscue feedback (graphophonemic, context cues, try again, terminal feedback and ignoring miscues; Table 1). All verbal exchanges were transcribed by the first author. Any questionable portions were presented to either of two trained research associates to discuss and come to agreements over. In rare cases of inaudibility, those specific utterances were excluded from analyses. Nonverbal codes were assigned for displays of facial expressions, eye contact, and hand/body gestures. Codes were tallied for the presence of all seven types of verbal and five types of nonverbal feedback. A total feedback composite was then calculated.

Inter-rater reliability. A research assistant who was blind to the parents' performances on the reading-related knowledge task coded over 25% ($n = 18/70$) of the reading transcriptions. Percent of agreement for the presence of each coded feedback type (praise, criticism, graphophonemic, context cues, try again, terminal feedback and ignoring miscues) on the transcribed sessions was 92.2%. Differences in coding were resolved through discussion.

Results

Parent–child interactions

On average, parents displayed 151.52 counts of feedback per session ($SD = 84.90$), of which 63.73% comprised evaluative feedback (praise and criticism; $M = 96.56$, $SD = 55.08$) and 36.27% comprised miscue feedback (graphophonemic, context cues, try again, terminal and ignoring miscues; $M = 53.30$, $SD = 40.95$). A paired-samples t-test was run to determine whether there was a statistically significant difference between mean counts of praise and criticism. Praise occurred significantly more often (91.46 ± 53.22) than criticism (5.10 ± 9.58), with a statistically significant mean difference of 86.36 (95% confidence interval, 73.62–99.11), $t(68) = 13.52$, $p < .001$.

Descriptive statistics for miscue feedback subtypes demonstrated that ignoring miscues ($M = 1.29$, $SD = 2.73$) and context cues ($M = 4.78$, $SD = 5.68$) rarely occurred during the storybook reading sessions and were therefore excluded in subsequent analyses. Descriptive statistics for the remaining evaluative feedback subtypes were as follows: graphophonemic ($M = 31.74$, $SD = 30.78$), try again ($M = 6.60$, $SD = 8.71$) and terminal feedback ($M = 8.48$, $SD = 8.23$). A 1×3 repeated measures analysis of variance was conducted to investigate main effects of the miscue feedback subtypes (graphophonemic feedback, try again and terminal feedback). Mauchly's test indicated that the assumption of sphericity had been violated $\chi^2(2) = 59.34$, $p < .001$. Therefore, degrees of freedom were adjusted using the Greenhouse–Geisser estimates of sphericity ($\varepsilon = .63$). The results showed a significant main effect of miscue subtypes, $F(1.25,82.57) = 41.44$, $p < .001$. Post hoc pairwise comparisons using the Bonferroni correction found that graphophonemic feedback was provided significantly more often than try again and terminal feedback ($ps < .001$). However, no statistically significant difference was evident between incidences of try again and terminal feedback, $p = .69$.

Children's reading scores and parental feedback

On average, parents correctly responded to approximately 23/39 of the reading-related knowledge questions. To rule out any effects of formal instruction in language arts, mean reading-related knowledge performances were compared between parents who were teachers ($n = 14$, $M = 24.93$, $SD = 4.95$) and those who were not ($n = 56$, $M = 22.31$, $SD = 5.56$). Scores did not significantly differ among the groups, $t(64) = 1.599$, $p = .115$, which supported merging the data from parents who were and were not teachers.

Children's mean raw performances on the WRAT 4 reading measure were at a Grade 1.22 level (range = 0.10–6.90; $SD = 1.29$). Internal consistency of the WRAT measure (Cronbach's alpha) in the current sample was .94, which approached the high internal consistency value of .96 reported by Wilkinson and Robertson (2006).

As shown in Table 3, bivariate correlations revealed that children's WRAT 4 reading (standardised) scores were positively associated with parents' reading-related knowledge scores and negatively associated with parental praise, graphophonemic feedback and terminal feedback. However, the associations between children's WRAT 4 reading scores and the remaining feedback subtypes (criticism and try again) did not reach statistical significance ($ps \geq .322$). Children's grade level was also negatively associated with terminal feedback and positively associated with children's WRAT reading scores. Similar patterns were found using raw scores on the WRAT 4 reading measure.

Given the significant associations between children's reading performances and their grade levels with parental feedback, both children variables (WRAT 4 reading scores and grade level) were subsequently controlled for in partial correlation analyses (Table 4). This allowed for an examination of associations between parental reading-related knowledge and types of feedback without the confounding influences of children's reading abilities and grade levels. Partial correlations demonstrated significant weak-moderate associations between parents' reading-related knowledge and two feedback subtypes: praise and graphophonemic feedback (Cohen, 1988). However, reading-related knowledge was not significantly associated with parental criticism, try again feedback, or providing of misread words (terminal feedback; $ps \geq .192$).

Multiple linear regressions were subsequently run with praise as the dependent variable in one model and graphophonemic feedback as the dependent variable in a second model.

Table 3. Bivariate correlations.

	Child grade	Child WRAT 4 reading	Parent reading-related knowledge	Parent praise	Parent grapho.	Parent terminal	Parent try again	Parent criticism
Child grade	—							
Child WRAT 4 reading	.55***	—						
Parent reading-related knowledge	.18	.30*	—					
Parent praise	.00	−.28*	.23	—				
Parent grapho.	−.21	−.39**	.17	.51***	—			
Parent terminal	−.29*	−.37**	−.12	.15	.44***	—		
Parent try again	.22	.08	.10	.03	.07	−.12	—	
Parent criticism	−.03	−.11	−.15	.11	.37**	.24*	.08	—

Note: WRAT 4, Wide Range Achievement Test–Fourth Edition.
*$p < .05$.
**$p < .01$.
***$p < .001$

Table 4. Descriptives and correlation coefficients (parent variables).

	Composite reading-related knowledge	Evaluative praise	Evaluative criticism	Miscue grapho.	Miscue try again	Miscue terminal
Composite reading-related knowledge	—					
Evaluative praise	.25*	—				
Evaluative criticism	−.16	.05	—			
Miscue graphophonemic	.30*	.46***	.37**	—		
Miscue try again	.04	−.02	.07	.12	—	
Miscue terminal	−.02	.03	.29*	.34**	−.06	—
Mean	22.86[a]	91.46	5.10	31.74	6.60	8.48
Range	11–35	8–261	0–65	0–158	0–47	0–44
SD	5.50	53.22	9.58	30.78	8.71	8.23

Note: SD, standard deviation. Effect of child reading performance and grade level was controlled for in the analyses.
[a]Composite scores were calculated out of a maximum score of 39.
*p < .05.
**p < .01.
***p < .001

Consistent with the rationale for controlling children's reading skills, children's WRAT reading scores along with their grade levels were entered in step 1, and parents' reading-related knowledge scores were entered in step 2 (Table 5). The first linear regression findings established that reading-related knowledge was significantly associated with amounts of parental praise, $F(3,61) = 2.842$, $p = .045$. Specifically, reading-related knowledge accounted for 7.1% of the unique variance in praise above and beyond the 5.1% already accounted for by the children's WRAT reading scores. The addition of reading-related knowledge in the second linear regression model was also statistically significant, $F(3,60) = 5.290$, $p = .003$, with parental reading-related knowledge accounting for an additional 12.5% of variance in graphophonemic feedback above and beyond the 8.4% already explained by children's reading scores.

Discussion

The main goal of the current study was to broaden current knowledge regarding parental reading-related knowledge. The data replicated findings from the limited extant research involving significant associations between parents' reading-related knowledge and their children's reading performances. We also extended the literature by investigating links between reading-related knowledge, parental practices, and children's reading. As expected, there were inter-individual differences in the amounts of feedback parents provided during joint reading sessions. Indeed, some parents were more responsive to children's reading attempts than others, which allowed for some interesting and varied observations in the quantity of feedback occurring during the dyadic exchanges. However, the primary focus of this study was on the quality of the feedback content. As such, three predictions were made regarding parental reading-related knowledge and associated

Table 5. Summary of hierarchical regression analysis for reading-related knowledge predicting praise and graphophonemic feedback.

		b	$SE\ b$	β
Praise				
Step 1	Constant	73.19	19.28	
	Children's grade	24.29	15.80	.22
	Children's WRAT reading scores	−12.25	7.39	−.24
Step 2	Constant	19.00	30.70	
	Children's grade	22.37	15.35	.21
	Children's WRAT reading scores	−16.01	7.36	−.32*
	Parental reading-related knowledge scores	2.68	1.21	.28*
Grapho. feedback				
Step 1	Constant	40.26	11.10	
	Children's grade	3.02	9.18	.05
	Children's WRAT reading scores	−11.25	4.23	−.38
Step 2	Constant	5.80	17.31	
	Children's grade	1.20	8.82	.02
	Children's WRAT reading scores	−13.56	4.15	−.45**
	Parental reading-related knowledge scores	1.73	.69	.31*

Note: WRAT, Wide Range Achievement Test. Praise: for step 1, $R^2 = .05$, R^2 change for step 2 $= .07$; graphophonemic feedback: for step 1, $R^2 = .13$, R^2 change for step 2 $= .08$.
*$p < .05$.
**$p < .01$.

practices. We found support for the first two predictions, suggesting that parents with better intuitive knowledge about the basic sound structure of the English language (higher reading-related knowledge) offer more praise and more graphophonemic-based feedback when they are helping their children read. This combination of feedback is quite noteworthy as concerns have been raised that providing graphophonemic teaching can detract from warm parent–child exchanges (e.g., Baker, Mackler, Sonnenschein, & Serpell, 2001). However, in line with Martin-Chang and Gould (2012), graphophonemic feedback was also positively associated with praise, which helps to create a positive learning atmosphere. Thus, the combination of these feedback types, which is more common in parents with higher reading-related knowledge, may be advantageous in impacting children's reading development.

We also predicted that parental reading-related knowledge would be negatively associated with criticism and terminal feedback. These predictions were not supported. Yet we were pleased to discover that parents in the present sample were far more encouraging than critical and offered far more graphophonemic feedback than terminal feedback. Indeed, the parents we observed offered roughly 18 positive comments for each critical one made and four graphophonemic comments for each terminal comment. In the former case, positive learning environments can sustain children's interest in learning to read, which admittedly can seem like a formidable task for some children; in the latter case, receiving added 'tips and tricks' when decoding (through explicit graphophonemic instruction) can effectively scaffold children's reading development. Thus, it is pleasing to see that parents overall

displayed productive feedback that potentially increased their children's engagement at the same time as increasing their reading proficiency.

Considering that a general component of effective parenting involves adjusting expectations to optimise positive learning experiences (Cligenpeel & Pianta, 2007), the combination of parental feedback reported here may also be reflective of parents' awareness of their children's levels of reading proficiency. Indeed, the fact that the children's reading scores were negatively associated with parental praise, graphophonemic feedback, and terminal feedback suggests that this may be the case. In particular, when parents are aware of their children's reading skills, they may feel the need to scaffold children with weaker alphabetic knowledge more than those with better skills (cf. Evans, Moretti, Shaw, & Fox, 2003).

In sum, the parents in our sample appeared to be familiar with their children's reading development; they seemed to understand when they should offer their children graphophonemic feedback to scaffold learning and when their children needed to be given the words they could not read (Evans et al., 1998). In line with previous findings (e.g., Evans et al., 1998) the present study demonstrates that parents are engaged when responding to their children's reading attempts. They rarely ignore reading mistakes and look for opportunities to actively praise their children.

Limitations and future directions

To our knowledge, this was the first study to investigate relations between parental reading-related knowledge in the context of child-to-parent reading. However, we have some suggestions that should be taken into consideration in future work in this area. First, the evidence regarding parents' reading-related knowledge and the feedback they provided is correlational; as such, we cannot make causal claims. Thus, future investigations should aim to explicitly target reading-related knowledge skills in parents to see if improving parents' reading-related knowledge changes the ways in which they interact with their children. From a practical standpoint, reading-related knowledge is more readily malleable than other parent variables associated with children's development (e.g., socioeconomic status [SES] and IQ). Moreover, the research shows that reading-related knowledge interventions can improve teaching practices and students' reading outcomes in schools (e.g., McCutchen et al., 2002; Spear-Swerling & Brucker, 2004). Thus, it stands to reason that enhancing parents' reading-related knowledge could also translate into more constructive home literacy practices and enhanced opportunities for learning. Moreover, considering the exploratory nature of this investigation, future research should investigate the content of parents' reading-related knowledge through exploring the pattern of subtypes displayed during joint reading. Indeed, the current study demonstrated that reading-related knowledge, as a construct, was related to various sources of feedback. This now sets the stage to delve deeper into which reading-related subtypes are significantly correlated with parental feedback.

In terms of other parent variables we investigated, the sample was overall quite educated and family SES was above the median provincial value. To establish if patterns of findings vary according to education and SES, future research should involve a more economically and educationally diverse sample.

It is also important to consider that the one-time snapshot gained from children's reading scores and parent feedback does not allow for a retrospective view into what lead to the children's current reading skills. Indeed, this study showed that children with higher reading scores received less graphophonemic feedback from parents while reading. This practice makes intuitive sense because there would arguably be no need to offer a child with good

reading skills copious amounts of feedback; to the contrary, doing so might be quite intrusive (Cligenpeel & Pianta, 2007; Wood, Wood, & Middleton, 1978). That said, we cannot know if these same parents provided increased feedback to their children in the past, which may have ultimately contributed to developing their current levels of reading proficiencies. Along the same lines, children with lower reading scores were provided with more graphophonemic feedback during this study; although speculative, we anticipate that this increased feedback would accumulate over time and result in stronger reading performances down the line. Once again, this question can only be answered by adopting a longitudinal design in future research.

Conclusions

The present findings provide insight into the relation between parental reading-related knowledge and reading feedback practices. Foremost, even after accounting for children's reading skills, parents' reading-related knowledge supports a more positive nature of exchanges (praise) and explicit instruction (graphophonemic feedback) in response to children's reading miscues. Together, these parental responses can allow for positive learning opportunities for emerging readers that may ultimately positively impact their reading trajectories. In addition, consistent with the teacher research, there appears to be natural variance among parents' reading-related knowledge skills and room for knowledge enhancement (e.g., McCutchen et al., 2002; Spear-Swerling & Brucker, 2004). Consequently, the findings bode well as a basis on which reading-related knowledge skills and associated feedback practices can be targeted. Promising findings have been reported in the teacher literature (e.g., McCutchen et al., 2002; Spear-Swerling & Brucker, 2004), and there is no reason to believe that this would be any different with parents.

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Notes

1. One parent did not report her relationship status.

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Appendix A. Types of Syllable Classifications, Definitions and Examples (adapted from Knight-McKenna, 2008)

Name of syllable classification	Definitions	Examples
Closed	A syllable with a single vowel followed by one or more consonants. (The vowel is *closed* in by the consonant.) The vowel sound is generally short.	r**a**t b**e**tter **i**t l**o**g f**u**n
Open	A syllable that ends with a single vowel. (The vowel is not closed in by a consonant; it is left *open*.) The vowel is usually long.	t**a**sty b**e** h**i** n**o** **u**niform
Vowel-consonant-e ('magic e' rule)	A syllable with a single vowel followed by a consonant then the vowel E. The first vowel is usually long, and the final E in the syllable is silent.	b**a**ke **e**ven l**i**ke n**o**te fl**u**te
Vowel teams ('When two vowels go walking, the first one does the talking' rule)	A syllable with vowel sounds that are formed by two or more letters (often two consecutive vowels). The first vowel is usually long while the second is silent. Sounds are different in cases involving the letter Y (e.g., buy) and diphthongs (e.g., loud).	tr**ai**n m**ea**t l**ie** t**oa**st bl**ue**
R-controlled	A syllable with a vowel followed by the letter R. The vowel is neither long nor short; the R influences or *controls* the vowel sound.	coll**ar** bett**er** b**ird** f**or** f**ur**
Final stable (consonant-le,-al, -el)	A syllable that has a consonant followed by the letters le, al or el. Often this syllable is the final one of the word and involves a schwa sound. This is the only syllable pattern without a vowel sound.	litt**le** unc**le** med**al** loc**al** chap**el** barr**el**

Appendix B. Adapted GORT Book (First Level; adapted from Wiederholt & Bryant, 2012)

Play ball with me

Page 1	Page 2	Page 3
Look Father.	See the ball.	I want you to play.

Page 4	Page 5
We can play ball here.	Come, Father. Play ball with me.

Appendix C. Reading-Related Questionnaire (adapted from Cunningham et al., 2004; Moats & Foorman, 2003; Spear-Swerling & Brucker, 2003)

How old are you? _____
Please indicate if you are a man _____ or woman _____.
Please indicate your current marital status:

Married	
Single	
Committed relationship	
Common-law	
Separated	
Divorced	
Widowed	
Other (please specify):	

Because the school system differs in various parts of Canada, we ask that you list your total years of education in each of the following (e.g., 7 years in elementary, 4 years in high school etc.):

Elementary School _____
High School _____
CEGEP _____
College _____
University _____
Other (please specify): _____
HIGHEST DEGREE OF EDUCATION ATTAINED: _____

Please check off your family's annual income:

Less than $10,000.00   ____
Between $10,000.01 and $30,000.00   ____
Between $30,000.01 and $50,000.00   ____
Between $50,000.01 and $70,000.00   ____
Between $70,000.01 and $90,000.00   ____
Between $90,000.01 and $110,000.00   ____
Between $110,000.01 and $130,000.00   ____
Between $130,000.01 and $150,000.00   ____
Greater than $150,000.01   ____

What languages does your child speak at home?

English: _____
French: _____
Other (please specify): _____

Please list the birthdates and gender of your child/ren (dd/mm/year), starting with your oldest. Please indicate the child we will be working with in Kindergarten or Grade 1 with a star.

e.g., 1) 06/06/01, boy   2) 18/07/04, girl   *3) 01/08/07, boy

1) _____   2) _____   3) _____
4) _____   5) _____   6) _____
7) _____   8) _____   9) _____

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1. Please say the following words to yourself while looking at the letters. Determine which letter or letters correspond to the sounds in the words, and underline each of them. Then record the number of speech sounds that you detect. For some items, more than one answer may be correct.

Here are some examples:

<u>m</u> <u>a</u> n 3	<u>sh</u> <u>i</u> <u>p</u> 3	<u>s</u> <u>k</u> <u>a</u> t e 4

Please segment the following words in the table and record the amount of sounds you hear:

fold	hay	lamb	blocks
sweat	thigh	eight	write
mix	cheese	straw	sword
listen	design	balloon	pistol

2. Most English words can be classified into six syllable patterns. The focus today is on four of them. Please place an X under the correct column corresponding to the syllable pattern present in each word. If you do not know, please check off 'I don't know'. Here are some examples:

	Closed	**Open**	**Magic E**	**Vowel Team**	**I don't know**
bag					
bite					
me					
bleat					

3. Please count the number of syllables that you hear in each of the following words. For example, the word 'threat' has one, 'cowboy' has two, and 'physician' has three. Record the number of syllables to the right of the words.

lightening	____	capital	____	shirt	____
spoil	____	decidedly	____	banana	____
walked	____	recreational	____	lawyer	____

4. All of the following words are common words that children usually learn to read in the elementary grades. Some of these words conform to typical spelling patterns in English, whereas others do not. For example, the word 'cat' is regular and the word 'island' is irregular.

Please circle the words below that contain <u>irregular spelling patterns</u> (the word 'island' has already been circled and identified as an irregular word).

Ant	Dog	Jump	Sheep	Turn
Bed	Done	Make	Son	Was
Book	Flower	One	Sugar	Watch
But	Girl	Pal	Swim	Want
Chunk	Give	Pint	Teacher	What
Cake	Hare	Rebate	Ten	
Cup	Have	Run	The	
Does	(Island)	Said	Tree	