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ENABLING LITERACY IN AT-RISK LEARNERS: DECODING SURFACE FORM VERSUS ATTENDING TO MEANING AND NARRATIVE STRUCTURE

How is it best to teach reading to at-risk delayed learners? A surface form decoding (SFD) orientation directs attention to letter-sound relations in words. A content based narrative (CBN) orientation concentrates on events in stories. When at-risk delayed learners are compared against controls large differences over the life span are apt to mask short-term differences owed to instruction. However, a more powerful repeated-measures design, as applied here, can detect differences over the short-term. Two stories were divided into five nearly equal segments to be taught either by an SFD or CBN orientation to each of four at-risk readers. Miscues and completeness of retellings for each method were cumulated over 10 sessions. The CBN orientation yielded fewer miscues ($p < 0.001$) and more complete retellings ($p < 0.05$). Attending to narrative structure, what is going on, what has happened already or will happen next in the CBN approach, helped students to solve meanings and decode the surface forms more than the SFD approach.

It is commonly argued that decoding the surface forms found in print, especially decoding the relation of printed letters to sounds, is the key to becoming literate (Blachman, 1997; Blachman, Tangel, Ball, Black, & McGraw, 1999; Hatcher, Hulme & Ellis, 1994; Hatcher, Hulme, & Snowling, 2004; Torgesen et al., 2001; Wagner & Torgesen, 1987). However, surface form decoding (SFD) approaches contrast with content based narrative (CBN) approaches that focus attention not on form as such, but rather on the essential content of activities, the substance of conversations, what's going on in a story, what will happen next, etc. (Goldstein, 1976; Lonigan et al., 2003; Hockenberger, Goldstein, & Haas, 1999; Rivers & Lombardino, 1998; Torgesen et al., 2001; Tornéus, 1984). Both the SFD and CBN approaches are enthusiastically advocated but usually not by the same

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people. In what follows, we review the literature favoring SFD, then, CBN. Then, we briefly consider a failed attempt to reconcile the two, and conclude that any real resolution calls for empirical testing of the contrasting and incompatible predictions of the competing viewpoints. We propose and execute an appropriate design and present its results. Based on the outcomes of our study, and other relevant research, we offer a new synthesis.

The problem

The SFD and CBN approaches could hardly be more different than they are and the importance of the controversy is merely intensified by the fact that it is generally admitted that *both* form and content must be dealt with in becoming literate. The only real question is where to put the emphasis. The problem is acute in the beginning stages of literacy. With at-risk children, where hurdles to be overcome present the greatest difficulties (Goldstein, 1975), it is all the more important to figure out how to optimize literacy instruction. How can teacher/clinicians best enable at-risk learners to make sense of printed forms of the target language?

The SFD orientation

In the early stages of building literacy, on the one hand, the SFD orientation, commonly involves the explicit teaching of letter-sound relations in isolated words or pseudowords. In the SFD orientation, the early teaching of letter to sound relations is considered crucial to enabling the learner eventually to work out all of the morphological, lexical, syntactic, semantic, and pragmatic relations in texts. The SFD orientation does not usually deny the importance of meaning, but rather it holds that meaning cannot be discovered in written material without first working out letter to sound relations. Advocates of SFD hold that the importance of intensive teaching of letter to sound relations and the instilling of phonological awareness is merely intensified for learners who are delayed and at-risk of dropping out of school.

Finding out that different letters, sequences of letters, and other marks are symbols of distinct sounds, syllables, words, etc., is judged to be especially important in alphabetic languages. There is widespread agreement that phonological skills and the association of printed forms with phonemes must play a role in becoming literate (Bradley & Bryant, 1983; Fox & Routh, 1975; Goswami, 2002; Rack, Hulme, & Snowling, 1993; Rivers & Lombardino, 1998; Treiman, 2000). Because of such thinking, researchers have often tried to determine how ability to decipher printed forms can best be facilitated (Ball & Blachman, 1991; Byrne & Fielding-Barnsley, 1989; Cunningham, 1990; Hatcher et al., 2004; Iverson & Tunmer, 1993).

The SFD approach argues that the letters and sequences of letters in a word, phrase, or text must be "sounded out" through explicitly taught associations of those letters or strings of them with phonemes or other linguistic units such as

onset and rime, different syllables, morphemes, lexical items, phrases, and so forth (Ball & Blachman, 1991; Bloomfield, 1933; Bradley & Bryant, 1983; Byrne & Fielding-Barnsley, 1989, 1993, 1995; Flesch, 1955; Tangel & Blachman, 1992; Torgesen, Wagner, & Roshette, 1994a, 1994b; Williams, 1980). Usually, proponents of the SFD approaches have concentrated their attention on phonemic correspondences between letters and sounds (Calfee & Norman, 1998). For example, to enable the learner to apply the alphabetic rule that the letter "k" stands for the class of sounds that begin and end the printed word "kick", the child might be directed to look at the letters at the beginning and end of that word. The clinician might point out, that the letter sequence "c-k", also commonly represents the sound /k/ as in the word "kick". This approach is SFD oriented because it directs attention to the visual shapes of letters and to the auditory and kinesthetic impressions made by the class of sounds they represent in alphabetic writing. Even if the clinician directs the child's attention to the entire sequence of letters by spelling out the word, "k-i-c-k", for instance, the approach is still SFD because it looks to the visual shapes of letters, the overall auditory and kinesthetic impressions made by hearing or saying the word aloud, and the motor impressions that may be gained by writing out or printing the letter or by locating it in a string of letters in a text, or on a keyboard.

According to the theory underlying any SFD approach, only after the word is discovered by sounding out its letters can its syntactic, semantic, and pragmatic values come into play. For this reason, Bloomfield (1933, 1943/1961) argued that using nonce or pseudowords was to be preferred over any meaning based approach. Bloomfield supposed that interesting content might draw the learner's attention away from the sound-letter correspondences, which he claimed were crucial. Ball and Blachman (1988), Rivers and Lombardino (1998), and many other researchers, have commonly used pseudowords to teach and or test phonological associations. Bloomfield (1943/1961) advocated especially using nonce forms with children having difficulty in order to reduce the cognitive load that he argued would be added by bringing meaning into play.

More recently, however, proponents of the SFD approach have noted that explicit teaching of letter and sound associations seems to work better when combined with the reading of meaningful material (Ball & Blachman, 1991; Bradley & Bryant, 1983, 1985; Byrne & Fielding-Barnsley, 1989, 1993, 1995; Cunningham, 1990; Hatcher et al., 1994; Hatcher et al., 2004; Iverson & Tunmer, 1993; National Reading Panel, 2000).

While many have argued that phonological/phonemic knowledge, especially the ability to manipulate sound classes and sound-letter relations in words and nonce forms, is essential to building a foundation for literacy and deeper reading comprehension (Byrne & Fielding-Barnsley, 1989, 1993, 1995; Torgesen et al., 2001; Wagner & Torgesen, 1987), measures of explicit phonological teaching (SFD approaches) generally assess ability to sound-out words and rarely focus on

deeper levels of comprehension. Also, it is commonly noted that phonological knowledge does not necessarily generalize to reading comprehension (Calfee & Norman, 1998). Nonetheless, there is widespread support for the view that developing phonological awareness is critical to enabling persons with reading disabilities (dyslexia) or other communication problems to overcome their limitations (Rosenshine, 1986; Stanovich, 1987, 1988, 1992; Clay, 1990; Felton & Pepper, 1995; Shaywitz et al., 1999; Berninger, 2001; Lyon, 2001).

Further, theoreticians who advocate the SFD orientation typically argue that children who have had minimal exposure to print and literacy activities will need more intensive drill on sound letter relations and more practice in sounding out letter sequences. Therefore, according to the SFD orientation, at-risk children need even more attention to word-attack, decoding skills, than other learners do.

The CBN orientation

On the other hand, proponents of CBN approaches have argued that SFD and phonological awareness in particular, are by-products of becoming literate rather than prerequisites (Fox & Routh, 1980; Hatcher et al., 2004; Rivers & Lombardino, 1998). The various approaches at this end of the spectrum are often referred to under the term "whole language", "experience based", "content based", or "narrative" grounded instruction. Instead of focusing on the surface forms of print as in SFD, a CBN orientation subordinates surface forms and directs attention to meanings. The CBN orientation directs attention to the protagonists of a storyline, conversation, or activity. Research with narratives by Shiro (2003, 2004) shows that younger children and those at a lower socioeconomic level do better in constructing personal narratives grounded in their actual experience than the same children do when retelling or constructing fictional narratives. This finding is consistent with the prediction from a general theory of signs (J. Oller, 2005; Oller, Chen, Oller, & Pan, 2005; S. Oller, 2005) that all else being equal narratives grounded in known facts must be easier to comprehend and to produce than those dependent on imagination, i.e., fictions. Errors and lies are even more difficult to manage, and complete nonsense is more difficult still according to a general theory of signs. The implication relevant to the teaching of literacy is that the closer the instructional materials used resemble discourse about actual or possible experiences known to the learners, the easier it will be for them to make sense of that material. Interestingly, letter to sound correspondences, without any meaning, say, as grounded in nonce forms as recommended by Bloomfield, are about as far as anyone can get from experience based verbal materials. Therefore, all else being equal, general sign theory predicts an advantage for a CBN orientation over an SFD orientation in the early stages of literacy instruction.

In a CBN orientation, the solving of phonological, morphological, and syntactic relations in the printed forms is subordinated to their semantic values and their pragmatic functions. Learners link printed surface forms with relatively well-deter-

mined content within a particular context, as in a meaningful storyline, a shared experience, or in connection with some enjoyable activity or game. When attention is directed to meaning – i.e., to what is going on in a narrative, activity, or shared experience, for instance, talking about who is involved, what they are doing, and why they are doing it – the child is engaged in actively working out (constructing) the conventional relations between the surface forms of the text and the events in the narrative, experience, or activity. Theoretically, such a CBN perspective, aims at a deeper, richer, and more constructive view of the surface forms as they are pragmatically mapped onto their intended meanings, i.e. the surface forms are linked with particular objects (including persons and events), whether real or imagined in one or more worlds of discourse. These mappings to meaning, as Vygotsky (1934/1978) noted, must be mediated to some extent through the assistance of a competent member of the community who is already literate: "The path from object to child and from child to object passes through another person" (p. 30).

Smith (1988a, 1988b, 1997) has gone so far as to argue that truly successful readers commonly do not translate written forms to oral ones. He argues that readers can see through the written forms directly to the meaning without bothering to translate them into surface speech forms. In support of Smith's claim see http://www.infantlearning.com/videoclips.html (visited July 19, 2005) where an infant of nine months can be seen reading printed words that she cannot say. When Aleka's dad shows and says the printed word "teeth", Aleka gestures vigorously and repeatedly with her pointing finger between her lips while touching her teeth and gums. When the word on the card says "foot" she grabs one of her feet, and moves it around with her hand. And so forth for "ear", "head", and "hand". Evidently, Aleka at nine months knows the meanings and can recognize the printed words before she has become able to produce their surface forms in speech.

According to the class of theories that see literacy as a meaning making process (Goodman, 1967; Halliday, 1977, 1989; Heath, 1982; Nelson, 1985; Norris & Hoffman, 1993; J. Oller, 1980, 1993, 2005; S. Oller, 2005; Rattanavich et al., 1992; Smith, 1988a, 1988b, 1997; Wood, Bruner, & Ross, 1976) the CBN approach can provide meaningful experiential (or imaginal) hooks with which to associate the surface forms that need to be deciphered. Although such meanings are only indirectly associated with the sounds and marks of punctuation represented by letters and sequences of them embedded in words, phrases, and larger units of text, theories that support the CBN approach argue that content embedded in meaningful contexts will enable networks of cognitive and emotional associations for the visual, auditory, and kinesthetic impressions of literacy activities. In short, content provides the needed cognitive and emotional hooks for the associations of printed forms with meaningful thought and experience.

In the CBN orientation the learner can benefit from the logical structure underlying ordinary experience, drama, games, activities, and narratives (Glenberg & Robertson, 1999; Heath, 1982; Kaschak & Glenberg, 2000; Norris & Hoffman,

1993; Rattanavich et al., 1992; Roth & Lawless, 2002). For instance, in a certain story, when the witch kicks the mail carrier, then the policeman, the farmer, and his cow, probably she can be expected to kick whatever comes along. The tendency for known objectives to form the basis for causal chains (Corrigan & Denton, 1996; Linderholm et al., 2000) helps the learner to decipher and recall associations of the surface forms of print with words, phrases, clauses, ideas, interpersonal relations, emotional reactions, and so forth. Similarly, pictures, dramatizations of activities, and talk about what is going on can help the learner to connect the events in the story or activity with events componentially constructed out of features of events the learner has actually experienced.

Such associations between content and meaning are encouraged in the CBN approach, but are relatively inaccessible in the SFD approach. While in the CBN approach there is apt to be a memorable association, for instance, between the "k" sound associated with the witch's kicking of everyone in the town and her "kick-a-lot shoes", in the SFD approach there are no obvious associations between the sound of the letter "k" and the persons, objects, or events in the story. If the child cannot decipher the surface forms, how will those connections be established by SFD approaches? Much less in the SFD approach are there apt to be meaningful associations between surface forms and inferences drawn from the storyline, e.g. that the witch's shoes are called "kick-a-lot shoes" because she likes to kick people. How can this idea be gleaned from letter to sound relations? Or from words sounded out one by one? A child might be able to sound out all the words, laboriously, and still not see critical inferential connections between facts of the storyline.

For all of the foregoing reasons, the CBN orientation, according to theories about constructing meaning and building up complex sign systems, provides a richer basis to enable learners to decipher printed surface forms and to associate and generalize them across the fuller range of their conventional meanings, as within the events of a narrative or in ordinary experience. In fact, children normally learn to deal with ongoing activities (Tomasello, 2001), and conversations (Bokus, 2005), before being fully able to construct and/or modify coherent fictional stories (Kielar-Turska, & Białecka-Pikul, 2004). For both SFD and CBN approaches, in every surface construction of interest, there are always multiple arguments and perspectives to be taken into consideration. In any CBN approach, critical questions are: Who is talking? Who is listening? What is being done by whom to what? What purposes do the actions serve? etc. Both the SFD and the CBN orientation are regarded by their proponents as necessarily subordinating the emphasis of the other approach. So, logically speaking, they cannot both be on the right track. Proponents generally regard one or the other of the two orientations, but not both, as essential to successful intervention with children at-risk for delay or failure in becoming literate.

Emphasizing the middle ground between the two almost maximally opposed ideas, there is also the so called "complementary view of reading" which asserts

the undeniable fact that the teaching of form and content cannot logically be entirely exclusive but must, rather, be complementary. However, if we read the literature, the "complementary" view, as advocated by Gough and Tunmer (1986), for instance, ends up in favor of SFD. In their "simple view of reading", it comes out that decoding skills are considered fundamental and prerequisite to the discovery of meanings in textual material. Gough and Turner argue that reading comprehension can be modeled in the equation *reading comprehension = listening comprehension* x *decoding skill*. They argue that reading comprehension is a multiplicative function of listening comprehension and phonological decoding skills. However, in the early stages of literacy acquisition, their model represents reading as translation from written forms (printed symbols) to oral forms (spoken sounds, syllables, and words). They hold that reading must begin with the decoding of written symbols and only later move on to the comprehension of meaning. It comes out that they are really advocating an SFD orientation. By their reasoning, if a child has trouble with decoding skills, he or she must also have reading comprehension difficulties and, therefore, the solution is the SFD orientation. Or, if a child has trouble with listening skills, he or she will have reading comprehension difficulties as well, and again, the solution is the SFD orientation.

With all of the foregoing in mind, it is safe to say that advocates of the two counterposed approaches, SFD versus CBN, are genuinely at odds. They have a genuine difference of opinion. The specific question addressed here, therefore, is: Which of these maximally different approaches to early reading instruction will actually work best with at-risk children? That is, will directing attention to the decoding of surface forms contained in reading material work as well or better than directing attention to its content? We are especially concerned with children who are at-risk for academic difficulties over the long run. While studies of at-risk children becoming literate commonly and appropriately compare them against controls who are judged not to be at-risk (Hatcher et al., 2004; Rivers & Lombardino, 1998), in this study it is not our purpose to evaluate the nature of reading difficulty as such, but to evaluate the relative effectiveness of the two maximally different and widely advocated instructional/intervention approaches specifically when applied to children who are at-risk of being excluded from "the literacy club" (Smith, 1988a).

Testing the SFD and CBN contrast

The purpose of the empirical study that follows was to determine if learners at-risk of further literacy delays, who were already experiencing reading problems and who were also at-risk of long-term academic difficulties in school and possible employment problems later on, would benefit more (or equally) from SFD oriented or CBN oriented literacy intervention.

To enable a fair comparison of the competing methods, all participants were exposed to both SFD and CBN methods (each with a different story) and were

only compared against themselves in a carefully counter-balanced and repeated-measures design (Badon, 1993; Badon, Oller, & Oller, 2005). More specifically, an alternating treatment repeated-measures design (Barlow & Hayes, 1979; Barlow & Hersen, 1984; Maxwell & Delaney, 1990) was applied so that the effects of SFD or CBN could be teased apart from the differences across the participants on the one hand and across the stories on the other. The power of such within-subjects repeated-measures designs, as noted by Maxwell and Delaney (1990, pp. 516-542), is that they are more sensitive to treatment differences than designs that look across subjects (and/or groups) where cumulative long-term differences tend to swamp short-term (especially recent) learning effects.

Cumulative effects of learning are known to be pervasive, substantial, and long lasting. Fewell and Deutscher (2004) found that early interactions between child and mother are dominant factors in later literacy. The same caveat holds for the cumulative differences between a group of at-risk children as contrasted with a different group of controls where the long-term differences are expected to be substantially greater than effects owed to short-term interventions. However, a sensitive (properly constructed) repeated-measures design can control long-term cumulative effects and tease apart the relatively smaller recent impact of methods of instruction. Logically, in the sort of repeated-measures design reported below, a separate control group is not needed, since it is the contrast between SFD and CBN orientations that is at issue rather than differences between the individual participants, or between the participants selected and one or more other groups. In a repeated-measures design, the at-risk delayed readers serve as their own controls and the SFD and CBN methods can be contrasted.

Three hypotheses were tested against the null possibility, that SFD and CBN would show no contrast. The three alternatives were: hypothesis 1, that SFD would be superior on the whole; hypothesis 2, that CBN would be superior to SFD; and hypothesis 3, that SFD would be superior on measures aimed at surface form accuracy and CBN would be superior on measures aimed at comprehension. Theories stressing the importance of sounding out words, phonological awareness, and phonics based methods of instruction generally hold that word attack skills are fundamentally important. According to those theories, the SFD orientation should produce better results all around, i.e. hypothesis 1 is predicted and both of the other alternatives should be ruled out. Theories emphasizing the crucial role of meaning (e.g., Goodman, 1967; Heath, 1982; Norris & Hoffman, 1993; Rattanavich et al., 1992) by contrast, generally contend that attention to content will not only facilitate comprehension but will also improve efficiency in deciphering surface forms, i.e. hypothesis 2 is predicted. On the other hand, if “students learn what they are taught”, as Calfee and Norman (1998, p. 254) suppose, it should be expected that learners will do better in a story-retelling task with the CBN orientation because they will gain a better grasp of meaning, but they will do better on a read-aloud task with the SFD orientation, thus predicting hypothesis 3.

Table 1. Participant ethnicity, age at time of testing, raw scores and standardized spoken language quotient (SSLQ) on the Test of Language Development - Primary (TOLD-P; Newcomer & Hammill, 1988) as well as standardized scores on the Test of Early Reading Ability, Form A, Edition 2 (TERA-2; Reid, Hresko, & Hammill, 1989), and the California Achievement Test - Reading (CTB/McGraw Hill, 2004).

Participant	Ethnicity	Age	TOLD-P		TERA-2 Reading Quotient	Percentile Score on California Achievement Test - Reading
			Raw Score	TOLD SSLQ		
M I	Caucasian	6;10	73	85	75	36
MA	Hispanic	6;8	77	92	87	51
TE	African-American	6;3	71	96	90	25
TA	African-American	6;12	64	75	87	50

Method

Participants

The participating learners were four females: at the following ages (1) 6;10, (2) 6;8, (3) 6;3, and (4) 6;11. All were first graders. Each one qualified for the USA free-lunch program and had parents with no more than a high school education. All four also performed within normal limits on an elicited oral narrative (Norris, 1989), but all had received a grade of "C" or lower in reading and were low in reading performance compared to peers according to their teachers. On nationally normed tests all taken within one month of the instructional intervention (see Table 1) – the *Test of Language Development – Primary* (TOLD-P; Newcomer & Hammill, 1988), the *Test of Early Reading Ability*, Form A, Edition 2 (TERA-2; Reid, Hresko, & Hammill, 1989), and the *California Achievement Test* (CAT) – Reading (CTB/McGraw Hill, 2004) – reading and/or language scores were below average on at least one of the three standardized tests.

Participant 1 at 85 on the TOLD-P was below the lower end of the average range on that test (110-90). Participant 2 was in the average range on TOLD-P, below average on TERA-2 at 87 (range 89-80), and above the middle of the distribution on CAT– Reading at the 51st percentile. Participant 3 was near the middle of the average range on TOLD-P at 96, and at the low average end on TERA-2 at 90, but scored at the 25th percentile on the CAT– Reading test. Participant 4 was in the poor range on TOLD-P at 75 (range 70-79), and below average on TERA-2 at 87, and at the 50th percentile on the CAT– Reading.

All the children were of normal hearing by a pure-tone screening at 1,000, 2,000, and 4,000 HZ and 20dB and none had been diagnosed or treated for any learning disability or language disorder. For all of these reasons, all four participants were judged to be of normal ability but nonetheless at-risk of literacy delay.

Materials studied

Two stories aimed at early readers were studied under the SFD and CBN instructional orientations: (1) *The kick-a-lot shoes* (Cowley, 1990; henceforth, the Witch) is about a witch who kicks everyone in a town where she lives. (2) *The road robber* (Cowley, 1988; henceforth, the Robber) is about a giant who rolls up roads and carries them off. The Witch story resolves when she hurts her foot and loses her kick-a-lot shoes. The Robber story resolves when the townspeople follow the thief and get their road back. At the outset, these narratives were judged to be of approximately the same difficulty level.

On the Flesch (1948) readability scale (applied from within the Microsoft Word program 2002), both the Witch and the Robber stories rated at the ceiling of 100 points showing them to be optimally easy according to that scale. Both of the stories were written by the same author and were judged to be at about the same reading level by their publisher. Although the Witch was nearly 50% longer at 420 words than the Robber at 284 words, the Robber had fewer and somewhat more complex sentences. The pictures accompanying the two stories were judged to be about equally informative and relevant to the text. The stories were of comparable difficulty in terms of a story-grammar analysis following Stein and Glenn (1979).

A more intensive and more accurate comparison, however, was obtained by constructing four cloze tests for each of the two passages (Klare, 1976, 1984; Oller, 1979; Oller & Jonz, 1994). An every fifth word deletion-ratio was applied from the first word, then the second, and so forth, until 80% of the words of each passage were tested. In other words, one pair of tests (Witch and Robber) deleted the first word and every fifth thereafter, the second pair deleted the second word and every fifth thereafter, and so forth until four out of five words in both passages had been tested. These tests were then administered in pairs, counterbalanced for order of presentation, to 21 adult native speakers of English (all of whom were adult readers 16 years or older with a mean age of 24). All 21 subjects filled in a cloze test on each of the two passages with approximately half of them doing the Witch story first and half doing the Robber story first. Four or five subjects completed each of the four pairs of tests with different starting points for the first deletion so that 80% of the words in both passages were tested.

By an exact-word scoring (where the answer supplied by the test-taker must match the deleted word, with spelling errors not counted), the mean score for the Witch story was .661 (SD 0.128) while the mean score for the Robber story was .609 (SD 0.141). These scores show that both passages were easy for literate adults since exact-word cloze scores above 53% are known to correspond roughly to comprehension scores of 85% and above (Oller & Jonz, 1994). The purpose of applying these cloze procedures was to obtain a more finely grained assessment of the relative difficulties of the two passages than could be gained from standard readability formulas.

It should be noted that an every fifth word deletion method scored by the exact word method, especially when applied to more than half the words in the texts to be compared, is extremely sensitive to relative minute differences in difficulty. Such a procedure will theoretically discriminate any pair of texts in terms of their relative difficulty. In fact, though the difference was not great (both texts qualifying as very easy for adult readers), the contrast was significant for a one sample *t*-test: $t(20) = 3.115$, $p < 0.005$ (two-tailed) showing the Witch text to be easier than the Robber text. However, owing to the counterbalancing procedure, this difference was distributed approximately equally in the design across the two methods of interest (SFD versus content) so that the measured difference between the difficulty levels, though unintended, does not invalidate the design because the differences were distributed equally over the SFD and CBN orientations.

Design and intervention procedures

The four at-risk readers (see Table 1 above) worked one on one with a USA licensed speech language pathologist, over a five-day period. Ten half-hour instructional sessions were recorded on video in an interactive repeated-measures design. In each instructional session the clinician directed the child to attend either to surface-form (in the SFD approach) by pointing out sound-letter relations in isolated words, or by talking about what had already happened in the story and what would happen next (in the CBN orientation). Sessions alternated between morning and afternoon with an SFD session on one story (either the Witch or the Robber) and CBN on the other story. All four children had five sessions focused on SFD using only one of the two stories and five sessions focused on CBN using only the other story. The design was counterbalanced so that SFD and CBN were applied to both stories but with distinct pairs of participants. Participants 1 and 3 worked on the Witch story in the CBN condition and the Robber story in SFD, while 2 and 4 did the Robber story in the CBN orientation and the Witch story in the SFD orientation.

All four participants worked on both stories and in both study orientations, counterbalanced for morning and afternoon sessions, so that the effects of any story differences were distributed about equally. Each story was parsed into five approximately equal segments, each representing a relatively self-contained (coherent) portion of the respective story. Each segment consisted of about two or three pages of text (with pictures included). The five successive segments were introduced in sequence during the five respective treatment sessions. On each of the successive days, one segment was presented from one of the stories in the morning and a segment from a different story was presented with the opposite method in the afternoon. Each session was 30 minutes long.

The focus on SFD or CBN alternated from session to session except that once a story was introduced in the SFD or CBN orientation, that method was always continued throughout the sessions with that particular child for that story. In the

SFD condition, word attack skills were stressed with isolated vocabulary, e. g. sounding out the letters of individual words taken from the story segment to be read during the session. The clinician would print each isolated word plainly with an erasable felt tip marker on a white board in large black letters about two to three centimeters high. The learner, assisted by the clinician, was encouraged to sound out the word, to read it aloud, and then the clinician would elicit a use from the learner or exemplify the use of that word in a sentence. After practicing several exemplars, the clinician would get out the story book, review the events up to the current segment, and then do a reciprocal interactive reading of the story with the learner. In the SFD orientation, during each session after the first, the clinician reviewed the prior events of the story up to the current segment while in the CBN orientation the clinician elicited all or part of the story from the beginning up to the segment for the current session.

In the CBN condition, the procedures were identical except that instruction focused on the developing storyline. Instead of concentrating on word attack skills where individual letters and words were isolated from the story context for the first third of each session (as in the SFD approach), in the CBN orientation, all surface forms were dealt with in the context of the facts of the story at issue. The learner's attention during each CBN session was directed to what had already happened, what was going on at the moment, and what was going to happen next. At the beginning of each CBN session, the learner summarized the story up to the point where the last session left off and then, interactive reciprocal reading would take place followed by relatively unassisted reading aloud by the learner and the closed book retelling task. The whole 30 minute session in each instance with the CBN orientation, therefore, was devoted to talking about the facts of the text while figuring out the words and either summarizing, reading, or retelling.

Near the end of every session with SFD and with CBN, the learner was given the opportunity to read the whole story aloud without assistance from the clinician. In cases where the learner hesitated for more than two seconds the clinician would prompt with the next word to enable the learner to continue. Immediately after the read-aloud task, in both instructional orientations (CBN and SFD), the clinician would close the book and the learner would retell the whole story from the beginning. All sessions took place in a separate room, away from the regular classroom. Only the clinician and the child were present during any of these pull-out study sessions. Each afternoon session for any given child was at least two hours after the previous morning session of the same day and SFD or CBN sessions were counterbalanced between morning and afternoon sessions.

Measures

There were six miscue/prompt measures for each read-aloud task. Aiming specifically at the potential benefits of the SFD orientation, six measures of surface form quality were taken for each of the 10 instructional sessions during the

relatively unassisted oral reading task. These measures included miscues and prompts collectively and should reveal benefits of the SFD orientation in particular if hypothesis 1 (that the SFD orientation should work best). This measure is also important to test hypothesis 3 (that studying SFD should reduce miscue/prompts but not necessarily improve performance on CBN). The miscue category included a simple count of (1) word omissions, (2) extraneous insertions (words produced by the learner that were not in the text), (3) reversals (either a word or portion of text was read out of order), and (4) substitutions (a word or phrase other than the one in question was produced by the learner). In the prompting category, a simple count was made of (5) the number of times the learner made a self-corrected miscue, and (6) the number of times the learner hesitated long enough for the clinician to intervene with a prompt.

Similarly, there were six measures of story-grammar components for the retelling task at the end of each session which were specifically aimed at the relative completeness of comprehension and recall of the content of the storyline. This measure was well suited to test hypothesis 2 (that the CBN orientation would work best) and in combination with the miscue/prompts measure also to test hypothesis 3 (that learners would learn what they are taught). The examiner told the subject "I want you to help me understand the story. Start from the beginning and tell me the whole story." No prompts were allowed, other than "uh huh", during the story-retelling. These measures collectively should be sensitive to the benefits from the CBN orientation. Following Stein and Glenn (1979) measures included the number of settings (i.e., descriptions of characters and scenes), initiating events (i.e., those that change the story environment or evoke goal formation, internal responses (reactions to prior actions or establishment of one or more new goals), attempts (actions that move the storyline along), consequences (results of attempts), and reactions (generalizations about how someone, possibly the reader, may have been or was affected by events in the story).

Results

In view of the fact that the hypotheses to be tested concerned the cumulative overall contrast between SFD and CBN over the five days and 10 occasions of instruction, Table 2 shows the mean number of miscue/prompts for each condition in the read-aloud task as well as the mean number of story components included in the story-retelling task for each condition in a repeated-measures design with four participants times five occasions times six measures, or 120 measures in each condition across tasks. Before conducting any contrastive tests on the measures taken, the measures themselves in both tasks were subjected to a stringent inter-rater agreement (reliability) check. With a second rater independently tallying miscue/prompts for the read-aloud task (for 25% of the total sample of data), absolute agreement attained was 99% and similarly for the judgment of story

Table 2. Cumulative mean (and standard deviation) for the 120 read-aloud measures and the 120 story-retelling measures contrasting the SFD orientation with the CBN orientation across the five days of instruction

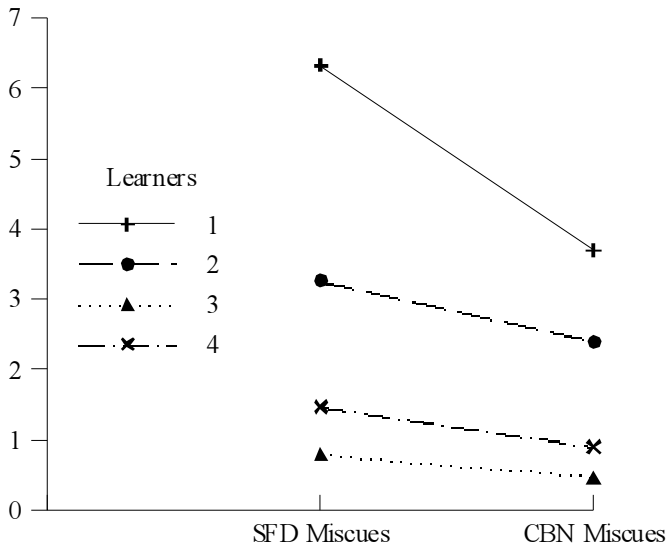
Read-aloud task (miscues/prompts)	n	Mean	SD	SEM
SFD orientation	120	2.97	6.492	0.593
CBN orientation	120	1.87	3.934	0.359
Paired differences of SFD versus CBN	120	1.10	4.918	0.449
Story-retelling task (story components included)		Mean	SD	SEM
SFD orientation	120	0.70	1.001	0.091
CBN orientation	120	0.95	1.413	0.129
Paired differences of SFD versus CBN	120	0.25	1.535	0.140

components included in the story-retelling task, absolute agreement of a second rater (on 25% of the total sample) was 97%.

As seen in Table 2, the contrasts in both cases between SFD and CBN favor the CBN orientation as predicted by hypothesis 2, i.e., that CBN would produce a better result on both tasks. In fact, the mean number of miscue/prompts favored the CBN orientation by 1.10 miscue/prompts overall and the appropriate one-tailed one sample *t*-test, yielded $t(119) = 2.45$, $p < 0.01$ showed that fewer miscue/prompts occurred with the CBN orientation. Similarly, the contrast between the SFD and CBN approaches on completeness of story-retelling was also significant by a one-tailed test with $t(119) = 1.784$, $p < 0.05$, again favoring the CBN orientation.

A more detailed analysis following a general linear model with repeated-measures showed that the overall contrast in miscue/prompts significantly favored the CBN orientation, $F = 6.058$ (2, 119), $p < 0.015$ and there was no significant interaction between participants and instructional orientation. As can be seen in Figure 1, the contrast between SFD and CBN consistently favored CBN across all four participants in spite of the significant difference between the two stories (the Witch story being easier than the Robber story as noted earlier). The contrast in methods was sufficiently strong to be detected in spite of the significant difference in difficulty level between the two stories.Similarly, a general linear model with repeated-measures as applied to the overall contrast in story-retelling completeness also favored the CBN orientation, $F = 3.668$ (1, 116), $p < 0.058$, although there was a highly significant interaction between learners and instructional orientations owing to the differences in the relative redundancies of the two stories (the Witch versus the Robber), $F = 7.058$ (3, 116), $p < 0.001$. This interaction is clearly seen in Figure 2 where the contrast between CBN and SFD can be seen to interact with that between the Witch story and the Robber story where learners 1 and 3 studied the Robber in SFD and the Witch in CBN, while learners 2 and 4 studied the

Figure 1. Contrast between SFD and CBN on mean number of miscues/prompts for each of the four learners on the read-aloud tasks averaged across all sessions

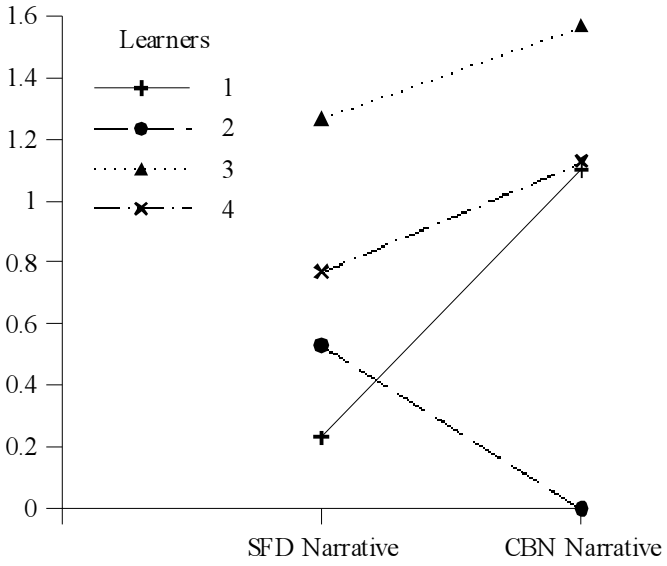


Witch in SFD and Robber in CBN. For 2 and 4, the plot of the Robber was sufficiently difficult that learner 2 was unable to produce any propositional elements from it and learner 4 who excelled on the Witch in the retelling task seemed to fall back when retelling the Robber. In spite of this interaction, the simple one-tailed *t*-test contrasting the differences between the SFD and CBN orientations on story-retelling did achieve significance at the 0.05 level.

Discussion and directions for further research

The most interesting element of the findings reported here, perhaps, is the fact that the at-risk learners studied, on the whole, had fewer miscue/prompts when conscious attention was directed not to surface form but to content in the storyline, e.g., who was doing what, what was going to happen next, why a certain action was being taken, etc. It would be interesting to laminate the findings by asking the children which story they liked better, i.e., the one studied in the SFD orientation or the one studied in the CBN orientation. An ethnographic follow up, if a preference should be expressed, would be to elicit comments on why they liked one better than the other. Another follow up would be to examine the videotapes with a view to indicators of interest such as animated facial expressions, gestures, or other positive indicators of interest as contrasted with the opposite kind of indicators, e.g., yawning, staring, or putting the head down on the table.

Figure 2. Contrast between SFD and CBN for total number of story components included in story-retellings by each of the four learners averaged across all sessions



It is interesting that the Witch story as contrasted with the Robber seemed to be relatively easier both for the four at-risk young learners to interpret as well as for the 21 adult readers who guessed missing words in the several cloze tasks used. What these findings suggest is that the episodic organization of a storyline itself has pervasive effects across the life span. This fact is evident in two ways: First, it is evident in the four at-risk first graders in the significant interaction (F = 7.058 (3, 116), $p < 0.001$) between learner and story assigned on the retelling task (compare learners 1 and 3 with 2 and 4, i.e., the Witch story with the Robber story) in Figure 2. Second, it is evident in the contrast in cloze scores on the two stories for adult readers showing in both cases that the Witch story is easier to understand than the Robber story (F = 9.7 (1, 20), $p < 0.005$). These contrasts in the relative transparency of the stories themselves clearly range across the life span. That is, even fluent adult readers are sensitive to the readability of texts written for younger audiences. This fact, judging from the effect sizes in question, may be as important or even more important to clinical interventions than are other contrasts in methods of intervention. Evidently, human knowledge about the episodic organization of experience and about the inferences that follow from a given set of circumstances in a storyline is important to the clinical context.

In a follow up study where one-minute segments of the contrasting methods in question (SFD versus CBN) were evaluated by 39 speech language patholo-

gists (SLPs) blind to the contrasting methods of instruction, the SLPs judged the CBN oriented sessions to produce more comprehension in the learners and they sharply differentiated the two methods. As shown by confirmatory factoring the SLPs not only differentiated the two methods but they independently judged the CBN approach to produce greater comprehension on the part of learners (Badon, Oller, & Oller, 2005).

Conclusions

As expected, the short term impact of instructional orientation (SFD versus CBN) is relatively smaller than are the starting differences across individuals which have been built up over the life span. Also, the differences owed to narrative structures (i.e., the predictability of words and events in the text, the cohesion and coherence of the texts as wholes, i.e., the Witch story versus the Robber) are also relatively larger than differences detected with respect to instructional orientation (SFD versus CBN). We conclude, therefore, that text selection can and did influence performance more than the method of instruction in this study. Nevertheless, the design was sufficiently sensitive to show that directing the at-risk learner's attention to content results in fewer surface miscue/prompts in reading aloud and in more complete and elaborate story-retelling than does attention to surface form. The CBN orientation gave better results all around than SFD.

These findings accord with common sense as well as the arguments reviewed above in favor of a CBN orientation. The Witch passage was easier to understand in part because it was a more coherent and plausible fiction. Compare the propositional complexity of a witch tormenting people with her kick-a-lot shoes until she inadvertently gets her just reward. She loses the shoes and gets kicked out of town. Compare this plot with the less plausible and more complex plot of the Robber where a giant profits enough by rolling up roads, hauling them off, cutting them up, and selling them as roller rinks and tennis courts to buy a jet plane and own an airport. The discourse world of the Robber is less easy to imagine. It requires inferences about the exchange of money for the tennis courts and roller rinks with characters who are never mentioned in the storyline. Yet how else could the Robber finance his jet plane? The plane, in turn, by backward inference motivates the need for an airstrip that, as we discover in the story, happens to have been constructed out of Strawberry Road. Hence, the thief stole the road to build the airstrip. The backward looking inferences of the Robber story make it less transparent than the forward inferences in the Witch story (see Ohtsuka & Brewer, 1992; Oller & Chen, in press).

By focusing attention on the content of a text as opposed to the printed forms that it contains, at-risk learners not only comprehend the meanings of the printed surface forms better, but they are also better able to apply decoding strategies to sound out words, phrases, and higher units in reading aloud. Attending to the

content helps at-risk learners work out the phonology and the pragmatic links of surface forms to their underlying meanings.

1. Contrast between SFD and CBN on mean number of miscues/prompts for each of the four learners on the read-aloud tasks averaged across all sessions.
2. Contrast between SFD and CBN for total number of story components included in story-retellings by each of the four learners averaged across all sessions.

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