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ABSTRACT

Using two original children's books and adaptations of these books created by basal reader publishers, a study investigated (1) whether children prefer original, unadapted stories that may have longer sentences and more vocabulary items than are permitted by readability formulas for their grade level, or the adaptations of those stories, which meet the formulas' criteria for their grade level, and (2) whether the adapted materials, which according to readability formulas are closer to the children's grade level, are really easier to understand. Subjects, 58 second graders in a small, central Illinois school, participated in both a preference interview and a comprehension task. Results indicated a strong preference for the original stories over the adaptations, especially among the less able and average readers. No significant difference in students' comprehension scores were found between the originals and the adaptations. These findings suggest that since children seem to find original materials more interesting and no more difficult to understand than adaptations, there is no educationally valid motive for continuing to adapt otherwise suitable texts to meet the demands of readability formulas. (Footnotes, 14 references and 13 tables are included.) (JD)

CENTER FOR THE STUDY OF READING

Technical Report No. 393

PREFERENCES FOR AND COMPREHENSION OF ORIGINAL AND READABILITY-ADAPTED MATERIALS

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Abstract

Fifty-eight second-graders participated in a study designed to provide a basis for answering two questions:

(1) Do children prefer original, unadapted stories which may have longer sentences and more vocabulary items than are permitted by readability formulae for their grade level. Or do they prefer adaptations of those stories which meet the formulae's criteria for their grade level? Critics (e.g., Green, 1982) have argued that the adaptation procedures make the stories less interesting, less exciting, and less coherent, and may hinder motivating children to read more. What do the children think?

(2) Are the adapted materials, which according to readability formulae are closer to the children's grade level, really easier to understand?

There was a strong tendency for the original stories to be preferred to adaptations of them, especially among the less able and the average readers. There was no significant difference in the comprehension scores between the originals and the adaptations. These findings have implictions for instructional practice: Since children seem to find original materials written for them to be more interesting and no more difficult to understand than adaptations, there is no educationally valid motive for continuing to adapt otherwise suitable texts to meet the demands of readability formulae.

The question of the advisability of adapting literary texts[1] to improve their readability according to some formula or other has a long history, throughout which it has generated strong opinions. For example, Claire Huchet Bishop, writing in 1935 about Thorndike's adaptations of classics states:

> The "removal of obstacles" seems to be, today, the chief concern of educators. They fail to make a distinction between obstacles artificially created for so-called building-up of mind and natural obstacles which are inevitable, necessary and inspiring, if one is going to live at all.
>
> In music, in a work of art, there is something called style, that very creation which makes it impossible for two artists to treat the same subject in the same manner and is the raison d'etre of the piece. What could be more brutal or unintelligent than the modification of a masterpiece which destroys the essence of the spirit of the work? The so-called obstacles are absolutely one with the work and the slightest change of a sentence, a word, or a comparison cannot but destroy the beauty of style. Thus, refusing to be bound by literary tradition and removing difficulties from the work achieve nothing but the most dried-up and limited kind of education. It is pathetic and contrary to life to be confronted only with what one can understand, and children who read the title page of the Thorndike edition--"edited to fit the interest and abilities of young readers"--will very likely lay the book aside, because if

> there is anything a child dislikes, or any one at any age for that matter, it is to have something handed to him and announced as being specially prepared to meet his understanding. Because, in everything, real obstacles, which are a part of a rich experience within the scope of one's own abilities, are a source of joy (Bishop, 1935; pp. 204-205).

Objections along these lines are still made today (see, for example, Bruce, 1984; Green, 1984), for with few exceptions, the publishers of instructional materials (e.g., basal readers) continue to rely almost exclusively on adapted texts. The purpose of the research reported here is to address directly the issues that those objections raise.

Effects and Expected Consequences of Adapting Texts to Reduce their Readability Scores

The means used to lower the readability score for a text are discussed at some length in Davison and Kantor (1982). Since the primary factors in computing the scores are word frequency or word length (which vary together pretty much, since frequent words tend to be short), and sentence length, the techniques for reducing the readability score involve (1) substituting shorter or more frequently used (or sometimes, more phonetically regular) words for words which the original author chose; (2) deleting words and phrases, both to remove "difficult" words, and to reduce sentence length; and (3) breaking up compound and complex sentences into series of simple sentences--generally this requires deletion of subordinating conjunctions (because, after,

so . . .), which connect clauses by stating or implying specific relations among the propositions they represent. Occasionally, passages in the original are completely reworked and summarized in the adaptation, but the more mechanical techniques of altering texts are far more common.

All four of these methods of adaptation change the character of the texts adapted. Most of them, in making sentences shorter and vocabulary "simpler," have the effect of making the adapted text less specific and less connected. One would expect that as a consequence, the stories would be less vivid, less clear about relations among events (including causes and motivations), and as a result, less interesting, less engaging, and more difficult to comprehend than the author intended. Indeed, Schlager (1978) reports that children much prefer to read about individuals (human or otherwise) that appear to be like them: to have the point of view, attitudes, reactions, emotions, etc. that a 7-to-12-year-old would be likely to have. If the image an adapted story presents of a character gives only vague information about that character's situation, feelings, and motivations, we can expect it not to evoke an image of a sentient and animated being that feels and reacts as a child believes people do. Thus, we can expect a story adapted this way not to be as appealing as an original, which presents a more vivid picture of the character and his or her situation, feelings, and motivations for action.

One might be skeptical that beginning readers could discriminate between two versions of the same story, but work with very young children (Green, 1982a, 1984; Green & Laff, 1980)

indicates that many are quite sensitive to various aspects of literary style, and can identify the author of an unfamiliar story if they have heard other stories by the same person. Thus, it does not seem unreasonable to expect that second graders might be able to make rational preference judgments on two different versions of the same story.

Adapting stories to lower readability scores has a number of effects. First of all, when a complex sentence is subdivided into a series of simple sentences, the subordinating conjunction that connected the clauses gets left out; to leave it in, just putting a period before it would result in an incomplete sentence, and paraphrasing it with something like This was because or The reason they did that was so that would not be as effective in shortening sentences. For example, in the following sentences from the beginning of one of the stories used in our study, the second sentence in the original (The Secret Hiding Place) is broken up into two sentences, and the reader must infer that the REASON the big hippos were eager for Little Hippo to wake up was that they got a thrill out of taking care of him,

(1) Little Hippo was the pet of the herd. Every morning the big hippos waited for him to wake up so they could take care of him.

[SHP-original: 26 words, 13 words/sentence, 11% not on Dale List of 769 Easy Words]

> Every morning was the same for Little Hippo. All the big hippos would wait for him to get up. They wanted to take care of him.
>
> [LH-adaptation: 26 words, 9 words/sentence, 5.5% not on Dale list]

It wasn't just that the big hippos liked Little Hippo. If readers fail to make this inference, it will not be so clear later why the big hippos' taking care of him bugs Little Hippo so much.

When a short, common word is substituted for a longer, less frequently used word, the common word is almost certain to be less specific than the word the author chose, and thus cannot convey the precise shade of meaning she or he intended. The passage in which the substitution is performed is made vague, and consequently, as with deletion of connecting words, intended inferences are less likely to be drawn. Description is made less accurate, and incorrect (unintended) inferences may then, and therefore, be drawn. As a result of substitution, the passage has less detail, and again as with deletion of connecting words, the reader has fewer clues as to the situation the characters are in, and the possible motivations for them to act as they do; situations and events are less likely to engage the reader's interest, and the characters appear flat, lifeless, and unrealistic. This is exemplified in another passage from The Secret Hiding Place and its adaptation:

(2) One morning Little Hippo felt cross. "I don't want lily pads and corn," he grumbled. "I wish the hippos wouldn't watch everything I do."

[SHP-orig. 24 words, 16% not on Dale list]

One morning Little Hippo said to himself, "I don't want anyone to bring me food. I don't want anyone to take care of me."

[LH-adap. 24 words, 8% not on Dale list]

In this case, food is substituted for lily pads and corn; said to himself for felt cross and grumbled; and take care of me for watch everything I do. This decreases the percentage of longer and less frequent words, but it exaggerates the effect of the alteration cited in (1), especially the latter two substitutions. In the original, Little Hippo is represented as feeling a desire for autonomy (to choose his own breakfast) and privacy--feelings quite familiar to children. In the adaptation, he sounds quite irrational, rejecting food and care IN GENERAL. What child would identify with that?

Deleting words and phrases reduces even more dramatically the detail in a story which allows a reader to understand the relations among characters and events, and to make the identification with a character that will make her WANT to go on reading to "find out what happens to" the character. This reduction of detail is clearly demonstrated in the following passages from Benjy's Dog House, the other story used in our study.

(3) One day Father said, "Benjy's not a puppy anymore. I think it's about time he slept outside. Let's make that old apple barrel into a dog house."

[BDH-orig. 27 words, 9 words/sentence, 26% not on Dale list]

One day Father said, "Benjy is not a puppy anymore. I think it's time he went outside to sleep. Let's make him a dog house."

[BDH-adapt. 25 words, 8.3 words/sentence, 20% not on Dale list]

The image of Benjy's dog house that this passage conjures up is quite different, depending upon whether one reads the original or the adapted version. The original goes on to detail how the dog house was established, decorated, and furnished, while the adaptation merely declares that it was constructed:

(4) Father brought the barrel out of the cellar. Jimmy put bricks on either side to keep it from rolling, and Linda painted it. Then mother put a blanket inside, and the dog house was finished.

[BDH-or. 35 words, 11.7 words/sentence, 20% not on Dale list]

So Benjy's family made a dog house for him.

[BDH-ad. 9 words, 9 words/sentence, 11% not on Dale list]

Finally, the original makes a point of noting the dog Benjy's failure to react positively to the dog house, while the adaptation leaves out that aspect of the story entirely.

(5) Everybody stood around admiring it--everybody, that is, except Benjy.

[BDH-or. 10 words, 30% not on Dale list.]
[BDH-AD. 0 words.]

The reader of the original knows just what Benjy's dog house looks like, and how Benjy feels about it. The reader of the adaptation knows that he has a dog house. The gist of the rest of the story is that Benjy can't sleep in the dog house, and when he finds another place to spend the night, the family is mortified, and allows him to sleep on the children's beds, as he used to. In the original, we are given a graphic description of what happens to the old dog house, so that the reader can understand how Benjy could know that he would never have to sleep in it again. In the adaptation, it just says that Benjy knew it, but the reader can see no justification for such a belief on Benjy's part.

(6) A few days later, Jimmy and Linda made Benjy's dog house into a strawberry barrel. They made holes in the barrel, filled it with earth, and planted strawberry plants in the holes. Benjy watched happily. Now he knew for sure he'd never have to sleep in that old barrel again!

[BDH-or. 51 words, 13 words/sentence, 16% not on Dale list]

Benjy knew he would never have to sleep outside again.

[BDH-ad. 10 words, all on Dale list]

Naturally, summarizing also has the effect of reducing detail, and, predictably, deletes information from which inferences were intended to be drawn about relations among events and characters, and motives, as illustrated in this passage from the hippo story.

(7) And every morning the big hippos pushed and bumped each other, hurrying to bring Little Hippo his breakfast of lily pads and corn. Big Charles said, "Put the lily pads here and the corn there." Then they all settled down to watch Little Hippo eat.

[SHP-or. 45 words, 15 words/sentence, 15.6% not on Dale list]

After Little Hippo was up, he was never by himself. Someone was always around to take care of him.

If Little Hippo wanted food, Big Charles would see that he got it.

"Little Hippo wants food," Big Charles would call. "Bring it over here." The big hippos would do just that. Then they would wait for Little Hippo to eat.

[LH-ad. 61 words, 8.7 words/sentence, 3% not on Dale list]

In the original, Big Charles appears as a benevolent dictator, running the show, while the other hippos are falling over each other fawning on Little Hippo. In the adaptation, we see only that Big Charles has organized the other hippos to care for Little Hippo as he sees fit, and they are obedient and watchful.

Again, the original gives us hints as to why Little Hippo wants so much to get away, while the adaptation makes this desire seem capricious. It is easy to identify with the Little Hippo of the original, less so with the one in the basal.

Thus, a major effect of adapting stories to meet readability formulae is to make those stories less specific, and give less information about relations among events and about characters' motivations for their attitudes and actions. Given that, readers can be expected to identify less strongly with the characters in the adaptations than in originals, and to the extent that identification is an important factor in motivating readers, they can be expected to prefer originals to adaptations.

We have already mentioned Schlager's evidence (based on content analysis of Newbery Award books with the highest and lowest circulation) that children in middle childhood prefer stories about individuals who perceive the world as they do. Bower (1978) reports experimental evidence that mature readers identify with the characters whose mood most resembles their own, and that they have better recall for stories when they have some indication of the main characters' goals and plans. Bettleheim and Zelan (1981) report that first and second graders they interviewed were unhappy with the books they read in school because the characters didn't seem real:

> They said they read only because they had to, and that on their own they would never choose such "junk." "It's all impossible," one of them said. When he was asked why, answers came from around the room: "The children aren't

real!" "They aren't angry!" When one child exclaimed, "They aren't anything!" all agreed that there was nothing more to be said (1981, p. 27).

Of course, vocabulary and syntax do affect the ease with which a text is read, but sentence length probably does not, although sentences whose difficulty can be traced to unusual or archaic syntactic constructions do tend to be longer than sentences that do not contain such constructions. [There, that was 47 words; was it so hard?] In any case, we do not expect 8-year-olds to sit down and read through Oliver Twist, no matter how much they may identify with Oliver. Indeed, Grover (1976) has shown that readability is a fairly good predictor (along with text length, relative number of illustrations, illustration style, genre, theme, and setting) of what books second graders check out of the school library. But we are not really concerned with differences on the order of the difference between Oliver Twist (Fry and Spache scores: roughly 12th grade) and some second grade basal, but differences on the order of one or two grade levels, as this is the average amount of reduction when trade books are adapted for use in basal readers.

The question is: Is it really necessary to replace more specific words with short vague words just because they are on some list of "easy" words (e.g., the Dale List of 769 Easy Words or the Dale-Chall list of 3000 Common Words--cf., Davison and Kantor, 1982, for discussion) and will therefore lower the readability score? As it happens, 10% of the 100 most frequent words in first graders' vocabulary according to Moe, Hopkins, and

Rush (1982) are not even on the Dale list, and 24% of the 644 words which each constituted .02% or more of their entire corpus (a 286,108 word running oral language sample) are not on the Dale list either. Since the 329 children interviewed by Moe et al. used over 6000 distinct words, we can suppose that a first grader will have active mastery of at least 5000 words. If this is so, then by limiting the vocabulary in a story to just a few more words than are on the Dale list, the limits are set way below what is necessary to ensure comprehension. It may be distracting (if it's not just boring) to have a general word in place of a more specific word which the context would lead one to expect, and if the specific word is in fact in the child's vocabulary, then the substitution is also arbitrary and pointless. Having a text that consists entirely of words that a child can be expected to decode because:

(1) they have previously been taught as sight words;

(2) they have been "prepared" by the teacher--pronounced, defined, and exemplified, for the sole purpose of reading the passage at hand; or

(3) phonics rules have been taught that will completely determine the correct translation of print into sound

is of value only if the criterion for being able to read is defined as the ability to read aloud with no mispronunciations. It is, in fact, possible to read silently and understand a text while having wildly incorrect beliefs about how certain words are pronounced. We have seen a child read ocean liner as "ocean linner," yet understand perfectly that what was being referred to

was a large ocean-going ship. Almost everyone can remember finding out that they have had an incorrect image of the pronunciation of some word (like misled, or determined) that they have been understanding, maybe even writing, for years.

Furthermore, the ability to learn new words from context is an important reading skill. Johnson (1979) defends not preparing all of the vocabulary a child will encounter in a text:

> In general, it is better to leave the words alone and let the children encounter them within the meaningful flow of language. When an unknown word prevents them from understanding something in which they are interested, they will ask. Two reasons support this rather cavalier approach:
>
> 1. Struggling to understand a word encountered in the flow of meaningful language is the usual, normal, and natural way that children acquire new vocabulary.
> 2. It gives the children practice in doing what they must do when they encounter unfamiliar words in their private reading. No one will have "prepared the vocabulary" for them and there may not even be an adult to answer questions. The only resources they have are their own abilities and the context (p. 41).

Indeed, if children come to expect that they will know how to pronounce and understand every word in every text that they are asked to read, they will be cruelly handicapped when they reach

junior high school and discover that they are expected to be able to understand new words from the context, or use a dictionary, or ask someone. They will feel frustrated, ill-prepared, and cheated, or perhaps, quite unjustifiably, merely dumb.

Bettleheim and Zelan's interviews (1981) indicate that children do in fact object to the language of their readers, as well as to the characterizations:

> Many told us that their teachers must have faked an interest in the stories, or that they must think children are not very smart.
>
> Fourth- and fifth-graders who had left the beginners' books behind described their resentments to us quite clearly. One rather quiet boy, who preferred to read or work by himself and rarely participated in class, spoke up all on his own and with deep feeling. He had felt so ashamed to say the things written in primers that he could not bring himself to do it. And although he now liked reading a lot, he said he still had a hard time reading aloud (p. 27).

Previous Studies

We are aware of a handful of studies of children's preferences in reading material. Some of this focuses on what kinds of illustrations children prefer (e.g., Lam, 1969). Other studies, such as Schlager's, and Grover's, approach the issue from the point of view of analyzing the books that children have freely picked. We know of no work that directly addresses the issue of preferences for and comprehension of readability-adapted material: Do children prefer to have their reading material

adapted to meet the arbitrary criteria of a readability formula in such a way that it will yield a score supposed to be appropriate to their status on the educational ladder, or do they prefer the texts as the original author wrote them? And regardless of their preferences, how does their comprehension of the originals compare with their comprehension of the adaptations?

Experimental Results

Subjects

Fifty-eight second graders from a public school in Rantoul, Illinois, who represented a cross-section of race, sex, and ability, participated in the study, which was carried out in November, 1982. Each child participated in both a preference interview and a comprehension task.

Materials

Two original children's books which had been adapted by basal reader publishers were used. Text characteristics of the two stories are indicated in Table 1.

Insert Table 1 about here.

For the comprehension task, all of the stories were retyped in the same format (roman characters, 10 to the inch, double-spaced, 55-space line) so that typographical and format differences between the versions would not affect attention and thus, possibly comprehension. The original version was identified by an orange border around the title; the basal

version by a blue border, mainly to reduce the possibility of error in administering this task.

For the preferences task, all of the stories were retyped in two parts, the first filling roughly a single-spaced page, with spaces between paragraphs, and the break coming at a natural break in the story. We wanted to keep format and typographical differences between the two versions of a story to a minimum, but our experience in piloting an experiment of this sort indicated that children were quite sensitive to the number of pages they were asked to read, so we did our best to keep the first part to a single page, even if this meant using elite (12 characters per inch) type rather than pica (10 characters per inch), and wider margins on some pages than others. In one case the story still overflowed, and was presented as a page and a third. The original version was on yellow paper and the adaptation on green paper, to make it as easy as possible for the subjects to identify which version they preferred. Format properties of the preference materials are summarized in Table 2.

Insert Table 2 about here.

The adaptations in SHP/LH involve vocabulary and syntax. Several presumably unfamiliar words (e.g., rhinoceros, zebra, leopard, chameleon, cave) were removed, mostly by deletion of the episode involving the item which the word names, or by substitution of a more familiar word (house for cave, friend for chameleon). In addition, a number of sentences with subordinate

clauses are broken up into two independent sentences, as illustrated earlier in example (1).

The adaptations in BDH are mostly at the discourse level, rather than the word level or the sentence level: 190 words of details and whole episodes are simply deleted. The most obvious effect of this is to make the story shorter, but it also has the effect of reducing characterization and obscuring the motivations for the characters' actions.

Procedures

Both the preference task and the comprehension task were carried out as individual oral interviews, after the administration of a vocabulary test (from the WRAT) which we used to identify groups of low-, medium-, and high-ability readers. The comprehension task involved the story which was not used in the preference task. The preference interview was always done first, as experience in piloting these materials indicated that if the preference task was done after the comprehension task, some children would insist on comparing the preference story with the comprehension story, instead of comparing the two versions of the preference story.

The preference interview was conducted as follows. The children were given the two versions of the first half of their preference story, randomized for version order. They were asked to read the two versions in succession, aloud or silently, as they liked. They were told that if there were words they didn't know, they could ask the interviewer, and she would just tell them. When the child had finished both versions, a brief

questionnaire about preferences was administered orally. Then the children were invited to read the rest of whichever version of the preference story they selected, and their choice was noted.

For the comprehension task, the children were asked to read to themselves, unless they preferred to read aloud. A comprehension questionnaire was then administered, again orally, covering what we considered to be the important points in the story, and also certain questions from the teachers' guide to the basal reader containing the adapted version. These latter we didn't consider necessarily important to understanding the story (e.g., for BDH: What kind of dog was Benjy?); they were to help in assessing which version was more likely to provide a reader with the ability to answer the questions which the publisher of the basal reader considered important. The comprehension questions thus differed a bit between stories.

Some of the questions could be answered on the basis of information contained in a single sentence in the text read. For example, the answer to LH question 1 (Why did the big hippos always wait for Little Hippo to get up in the morning?) is to be found in a single sentence from SHP: "Every morning the big hippos waited for him to wake up so they could take care of him." In some other cases, the question could be answered entirely on the bais of information explicit in the text, but that information might be spread out over several sentences. For instance, the answer to BDH question 9 (Why did the baker let

Benjy in?) is explicit in the text, but takes up three sentences in BDH-ad.:

> "Come on in," said the baker. "My cat ran away weeks ago. I have really missed her."

We refer to the first kind of question as a sentence-meaning question, the second kind as a paragraph-meaning question. Still other questions require the reader to not only understand what is explicit in the text, but make substantial inferences from it.[2] One example (of many) is BDH question 16 (What made Benjy sick that night?). Answering this question involves making the correct inferences from the following text (from BDH-or.)

> Meat pies! He ate one. It tasted so good . . . that he ate another one, and another, and another till all the meat pies were gone!
>
> Then he curled up to go to sleep. But in a little while . . . Benjy began to have an awful stomach ache.

Another example of an inference question is LH question 8a (Why didn't Little Hippo like being where the lion lived?); the answer must be inferred from a passage like this if the reader read LH-ad.

> Little Hippo was very quiet as he sat in the lion's house. It was like night in there. Little Hippo was afraid to walk around. He was sure that someone was in the house with him.
>
> "I don't like this hiding place," he said.

The differences are summarized in Table 3.

Insert Table 3 about here.

Results

Overview

The preference interview consisted of questions (listed in Table 4) which asked for preference opinions (questions 3, 9, 13) or evaluations of story properties (questions 5, 7, 11) we considered likely to be major factors in determining preference ratings, and reasons for those opinions or evaluations. In addition, the choice of version to finish was recorded as a preference opinion.

Insert Table 4 about here.

In no case did more children rank the adapted version above the original than vice versa, either in preference opinion, or in evaluation of interest or excitement, although 36 children evaluated the original as harder, while 18 thought the adaptation was harder. This indicates that finding a text easier was apparently not a sufficient reason to prefer it. There were some inconsistent responses--children who said they liked one version better, but finished the other one. When these are factored out, the preference for the original over the adaptation is even clearer. This will be discussed in the following section, along with differences between the stories, and among ability groups.

The comprehension questions mentioned above were open-ended questions (e.g., Why couldn't Benjy sleep in the doghouse? What

did the Baker give Benjy? Where was Little Hippo's secret hiding place? Who tried to help Little Hippo find a hiding place?). Consequently, guessing would not be likely to be an effective answering strategy, as it might be with true-false or multiple-choice questions; the percent correct reflects how accurately students' understanding of the story allowed them to answer the questions we asked, and not their guessing. Though the mean percent correct overall was around 55%, this is significantly above chance, given the kinds of questions being asked. The range was 3.5% correct to 82% correct.

Differences in comprehension between versions were not significant. Children reading the original version answered a mean of 55% of the comprehension questions correctly, while children who read the adaptation answered a mean of 56% correctly. Children reading the dog story (BDH) had 63% of the answers correct if they had read the original, 60% correct if they read the adaptation. For the hippo story (SHP/LH), the difference is reversed: The mean percent correct was 47% for children who read the original, 50% if they read the adaptation. There were differences among ability groups, of course, but in different directions. These are most noticeable when the stories are examined separately. This is discussed in the Effect of Ability section.

Preferences. As mentioned above, answers to all the preference questions indicated that the original version was preferred to the basal version, though in some cases the

differences were not very large. Answers to the preference questions are summarized in Table 5.

Insert Table 5 about here.

The original was preferred by a ratio of almost 3 to 2 on the question which asked for rankings when the two versions were freshest in the children's minds (#3), and on the question which asked most directly which one they preferred (#13). The original version was considered more interesting, by the same ratio, and in fact, the answers to questions #7 (Which one was more interesting?) and #5 (Which one is harder?) seem to be the best predictors among the evaluation questions (5, 7, 11) of which version they actually finished. Forty-three of the 58 students finished the version they said was more interesting. An equal number finished the version they said was easier. (Thirty-eight finished the version they said was more exciting.)

When the two stories are considered separately, some of the differences are even more striking, as shown in Tables 6 and 7. The majority of children who preferred the original SHP to the adaptation LH did so by a 3 to 2 ratio, although their evaluations of the two versions don't indicate clearly why, being divided pretty evenly between the two versions, as are the other preference questions (9 and 13). A majority, by a ratio of 2 to 1, thought that the original version of BDH was more interesting than the adaptation, and said at the end of the interview that they preferred the original. It is not surprising

that they found the original more interesting, since the main difference between the versions is that the original contains details indicating motivations that are left out in the adaptation.

Insert Tables 6 and 7 about here.

Consistency. As mentioned above, about half of the subjects gave "inconsistent" responses, that is, rated one version higher in one of the preference questions and the other higher on one or more of the others. There are several possible reasons for this. First, the questions were, in fact, different from each other. It is plausible and rational to say, for example, that you want to finish one version, but if you were going to re-read for pleasure, would choose the other version, and this holds for either choice of version. The basal might be preferred for the immediate task because of its simpler vocabulary, and the original for re-reading because more of the context would be known, and the more difficult words could be more easily guessed. Or the original might be preferred for the moment because it was more interesting, but the basal for reading at home alone because it could be read without assistance. In fact, the reasons the children gave are actually more complicated than this. Some preferred the basal for re-reading because they assumed the re-reading would be done at school, and therefore there wouldn't be much time, and the basal was shorter (i.e., "because in school you have to have a short story"). Others preferred the original

for re-reading because it was longer, and they wouldn't be done with it so quickly ("I like pretty long things"). Several others said they preferred to re-read the original because it was harder and they wanted to work on it some more ("because I couldn't understand it," "to keep trying to understand it better").

A second reason for apparently inconsistent answers is that some questions were extremely similar, and subjects may have assumed that the experimenters could not possibly have been asking the same question twice, therefore the question must be rather different from the one it sounds like, so the answer must be the opposite of the answer to that question.

Two more possible reasons turn on what we might consider to be less rational reasons. Four children said they liked one version better than another because they liked the color of the paper it was on better, but this was not a response to questions about why they found one version more interesting or exciting than the other. A few other children may have deliberately distributed the largesse of their preference pronouncements in such a way as to "be fair" or "not hurt the other story's feelings." We do not know if any of our subjects actually fall into this latter category, but we have observed this behavior in other children.

Finally, some, perhaps most, of the children who gave "inconsistent" responses may simply have been unable to keep straight which story was which. It should be noted that, rather than casting doubt on the validity of the preference research as

a whole, the possibility of irrational responses of the sorts described makes only the sets of inconsistent answers suspect.

In light of this, we also present a tabulation, in Table 8, of the preference evaluations for children who were consistent in their answers to the questions which directly probed preferences (i.e., questions 3, 9, 13, and 14). Again, the original was preferred to the adaptation by a ratio of more than 3 to 2, overall, and by more than 2 to 1 for the story BDH.

Insert Table 8 about here.

Reasons for preferences. We close this section with an informal analysis of the responses given to the open-ended questions (4, 6, 8, 10, and 12). These questions ask the children to give their reason(s) for answering the preceding question (3, 5, 7, 9, 11) as they did. We decided to have these questions open-ended, rather than, say, multiple choice (even though that kind of response would have been much easier to evaluate) in order to avoid putting words in the children's mouths or suggesting things that would not have occurred to them on their own. In other words, we wanted to elicit their true impressions as much as possible.

As would be expected of 7-year-olds, many of the children tested were not particularly articulate about their opinions, but even so, the answers clearly indicate that most could and did understand the questions and answered them to the best of their ability. By far the most common justification given for the

answer to "Which one would you like to finish?" was "I like it." Eleven children said this about the original version, five about the adaptation. Four children preferred the original because it was longer; one preferred the adaptation for that reason. (In fact, the portion of the original of LH/SHP that the children read is 42 words longer than the portion of the adaptation, and the material from the original of BDH is 139 words longer than the adaptation excerpt.) Here, as with most of the other justification questions, n other responses were distributed more or less evenly over 2n to 3n respondents, where n ranges from 7 to 12.

The children agreed that having more detail made a version more interesting. Eight said this about the original, which in fact had more detail; one attributed it to the adaptation.

When asked to justify their answer to "Which one would you like to read again some day?" five cited greater length, six cited ease of reading, and five said "because it is more interesting." In each group, four preferred the original.

As indicated above, the children judged the original to be more difficult, by a ratio of 2.5 to 1. Most of the respondents attributed the greater difficulty of WHICHEVER version they found more difficult to "the words" (31 of the 33 who judged the original harder, and 9 of the 13 who judged the adaptation harder). This is not surprising, since more of the words in the original are less likely to have been encountered in print before (e.g., zebra, chameleon, barrel), while more of the words in the adaptation are too vague (i.e., friend for 'non-hippopotamus

friend') or misleading (i.e., house for 'dwelling' or 'cave') to enable the reader to pick out an appropriate referent with any degree of certainty or precision.

None of the responses to "What makes it more exciting?" (to justify the answer to "Which one is more exciting?") addresses the question directly. Six children said "It has more detail" (five preferring the original); five children attributed their choice's being more exciting to its being "written better" (all five preferred the adaptation).

Predictably, where the adaptation was preferred over the original, the most common reason given for this preference was that the adaptation was shorter. This answer was very common for questions 4 and 10. Most did not elaborate on this theme, but one child showed a fine awareness of exactly what made the original longer than the basal: The child reported preferring the basal (of BDH) because "you don't have to go through that many stores, like the police station." (In the original, Benjy tries to sleep in several places, such as the firehouse and the police station, before ending up at the bakery, but in the basal he goes straight to the bakery.) Thus, this child was aware that the original was longer because it was more detailed. Length again was a common factor mentioned in answer to #10 (why [would you want to read] that one [again]?), although "It's more exciting" or "I like it better" or "It's better" were also quite common.

In contrast to the child quoted above, a significant number (14) of children said they preferred the original BECAUSE it was

longer and more of a story," "the green one [basal] doesn't have as much words in it and I like to read a lot." Some responses show an acute sensitivity to and appreciation for the extra detail found in the original. For example, one child said the original was more exciting (question 12) because of an incident that occurred only in the original: "because Benjy walked down the street and nobody wanted him but the baker." (As was already noted, the basal doesn't mention Benjy's visiting anyone but the baker.) Another child, who consistently preferred the original, listed details not found in the basal in answer to three of the five open-ended questions, e.g., "he (Little Hippo) was gonna run into a thorn bush and catch stripes from a zebra"--this incident is deleted in the adaptation. Another reported preferring the original (of LH) because the title of that version ("The Secret Hiding Place") was more interesting than the title of the adaptation ("Little Hippo"). One can see why: The title of the original refers to two notions (secrets, hiding) that represent an important part of life for a 7-year-old, while Little Hippo scarcely refers to one (littleness).

The answers given to #8 and 12 (What makes it more interesting? What is more exciting about it?) deserve some further consideration. Some children appealed to length or reading ease as reasons for one version being more interesting/exciting than the other. Others responded to these questions by mentioning an incident from the story, as mentioned

earlier. A few became confused and recalled an incident that occurred only in the other version (i.e., not in the one which the child had indicated preference for in #7 and 11), or an incident that was equally present in both versions.

The responses to these open-ended questions were not amenable to statistical analysis. But certain things are obvious and significant without formal statistics. First of all, in the majority of cases the responses indicate that the children understood the task and answered the questions directly and sincerely. Most answers, although not always articulate, were straightforward and easy to evaluate. Confused and uninformative responses were relatively uncommon, but did occur at least once with each of the open-ended questions. But such responses were much more common with #8 and 12 than with 4, 6, and 10^3.

In conclusion, the evidence from these open-ended responses indicates that the children understood the task presented to them and did their best to answer informatively. They were uniformly cooperative and straightforward. We found no evidence of any child being facetious or deliberately misleading. The main problem in collecting preference data is the children's inability to articulate their feelings and opinions and/or to make a coherent analysis of the differences between the two versions. But these problems are due much more to the age of the children than to the questions or materials. It is fair to say, then, that these data support our conclusion because they show that the majority of the children knew what they were saying and why

when they expressed their preferences for one version over the other.

Effect of ability. When the preference ratings were analyzed according to the ability groups of the students (as measured by their WRAT scores), some differences showed up which surprised us, since they contradicted our assumption that good readers would discriminate more between the versions than children who did not read as easily. The students were divided into three groups of roughly equal size. Overall, and for LH/SHP, the preference differences were not significant (though almost always in the direction of the original), as indicated in Table 9. For BDH, however, the differences are striking, and significant.

Insert Table 9 about here.

What was surprising to us was that the best readers (as measured by their performance on the WRAT vocabulary screening) were the only ones who, as a group, preferred an adaptation to an original, while the least able group preferred the original over the adaptation by a huge margin.

We have assumed (1) preferences affect motivation, in particular, that children will be more motivated to read things they like better, and that (2) motivation is more crucial among the less able readers than it is for children who read easily. If this is correct, the fact that the less able readers preferred the original of BDH by 9 to 1 is much more significant than the

fact that the best readers preferred the adaptation 5 to 3; it matters less[4] how the best readers felt as they are generally already highly motivated and well-disposed toward reading, and in any case, in this experiment, were reading texts well below their ability. The fact that the least able readers strongly preferred the original provides persuasive testimony that we needn't fear discouraging poor readers by giving them texts that aren't edited down to someone's statistically derived conception of their ability. They are more motivated to read integral stories with enough text and language for proper plot and character development than they are to read awkwardly strung together strings of "easy" sentences.

The fact that the children were apparently more sensitive to differences between the versions of BDH than to the differences between the versions of SHP/LH may indicate that the differences in language (vocabulary and sentence length) that characterize the latter are not so salient to them as they are to the readability industry. In any case, there is no evidence that they found the longer sentences and less familiar vocabulary of the original SHP to be a reason to prefer the adaptation.

When only the consistent subjects are included, the differences are even more striking, as indicated in Table 10.

Insert Table 10 about here.

Discussion. The low- and average-ability groups still overwhelmingly prefer the original version, while the higher

ability group is more equally divided. Perhaps the higher ability students are not as discriminating in their tastes as those for whom reading is more of a struggle. After all, if reading is easy for them, it may not matter too much to them how satisfying any individual book is. For them, just reading is enjoyable. But for children for whom reading is work, the kind of payoff that work yields is much more important; some things will be judged worth reading and will be read, while other things will be judged to be not worth the trouble, and won't get read. For good readers, it's no trouble, and everything gets read. Teachers and librarians will testify that many good readers will read formula fiction and other "junk" as readily as literature.

When ability was measured according to subjects' performance on the comprehension task, the results are a little different. The high ability group preferred the original by a ratio close to 2 to 1 overall, preferring the original of LH/SHP by 3 to 1, and the original of BDH by a small margin, as indicated in Table 11.

Insert Table 11 about here.

However, taking into consideration all the preference questions asked, the low group tended to prefer the adaptation of BDH, while the medium group overwhelmingly preferred the original, and the high group was close to evenly divided. For LH/SHP, there was little consistency within ability groups across questions. One implication of these results may be that it would

be premature to make generalizations about the preferences according to "reading ability."

Comprehension

The comprehension data are summarized in Tables 12 and 13. The difference between versions was not statistically significant. However, students who read BDH answered a greater percentage of questions correctly than the ones who read SHP/LH, and the difference between stories was significant. As might be expected, the high-ability group did better than the medium-ability group, who did better than the low-ability group. The differences among ability groups was significant.

Insert Tables 12 & 13 about here.

No doubt these means appear quite low (the range was 3.5% correct to 83% correct). Even good readers, reading grade-level adapted material, did not score above 70% correct on SHP/LH. There are (at least) three probable reasons for this. First, the questions may have been harder than the kinds of questions typically asked in assessment procedures; we attempted to ask exclusively questions which would indicate whether the child understood all of the events and relationships necessary to understanding the point of the story. There were no questions about details just for the sake of having questions about details. However, we included questions from the teachers' guide which may have probed details we considered irrelevant.

Second, no questions were asked until the children had read the entire story. Then questions covering the entire story were asked, following the sequence of the story. This means that there are questions which can only be answered correctly if a previous question has been answered correctly. It also means that the material covered is much greater, and the series of questions much longer and more richly structured than is usual for comprehension assessments, whether on standardized tests, or in the course of instruction. This situation is bound to generate lower scores than otherwise might have been obtained.

A question that naturally arises at this point is: Why is there such a striking difference in the comprehension of the two stories? Probably some disparity arises from differences in the stories themselves, as discussed in Section 1. For example, SHP/LH was a relatively inexplicit story--typically inexplicit for both trade picture books (illustrated books meant to be read to children), and primary-level basal reader stories. A certain amount of the story has to be inferred. We were careful not to use texts which required inferences from illustrations to be correctly understood,[5] but there is no doubt that illustrations could have confirmed and reinforced the inferences that were necessary. Relative inexplicitness of the text is quite likely a major factor in the relative depression of scores, as the scores on BDH, which was much more explicit, were considerably higher. In addition, some of the difference may be attributable to the fact that the mix of question types differed between stories, as indicated in Table 4. Thus, 50% of the questions for BDH could

be answered correctly just by understanding the meanings of the individual sentences, while only 7% (adaptation) or 21% (original) of the SHP/LH questions had this property. On the other hand, 14% of the BDH questions required the subject to put together the information in an entire paragraph to be answered correctly, while 36% (original) to 43% (adaptation) of the questions for SHP/LH had this property.

Probably the fact of most significance to emerge from these data is that overall, the difference between versions is not significant, while there are large and significant differences between texts. (The mean comprehension scores on the level 3 original of BDH was 16 points above the mean comprehension score on the level 3 original of SHP. The comprehension scores on the level 2 adaptations were 10 points apart, and in the same direction.) This means that more global, structural, and organizational properties of texts (as just described), are significant. But readability formulae do not measure these. At the same time, characterizations based on word length, word frequency, and sentence length fail to predict differences of the sort that are obvious here. It is true that when the results are broken down by ability groups, there are some apparently large differences between versions. However, three other facts make it unreasonable to attribute much to these differences. First, the difference between stories is significant, and striking: differences of 5 to 39 percentage points for 5 of the 6 groups (all except the high ability group that read original versions); the low-ability group reading original versions got 22% correct

on SHP, 61% correct on BDH. Yet the poor readers reading the original of BDH did almost as well as the good readers reading SHP (the good readers got an average of 67.33% correct). Second, the differences are in both directions; the high-ability group performed better on comprehension questions when they read the original of SHP/LH than when they read the adaptation, though the opposite was true for the low- and medium-ability groups. With BDH, the results are just the reverse: The low- and medium-ability groups (especially the low-ability group) did better answering questions about the original than about the adaptation, while the high-ability group did worse. (Again this points to a difference between the stories or the questions asked about them.) Third, when the groups are broken down by story version and ability group, they are too small to make meaningful comparisons between cells.

Conclusions

The study reported here supports the hypotheses of text analysts (e.g., Davison & Kantor, 1982; Green, 1984) that:

1. Children prefer texts as originally written for children to texts that are adapted from such material to meet the criteria of readability formulae. This is especially true of poor and average readers.
2. Readability-adapted materials are not significantly easier for children to understand than the originals one or two grade levels higher, from which they were adapted.

The differences in word length, word frequency, and sentence length that are the stock in trade of the readability industry and the sacred cows of ignorant legislatures and adoption committees are irrelevant both to comprehensibility of texts and children's preferences.

To the extent that the results reported here are robust and general, they indicate that the pressure on educators, and on the publishers of reading textbooks to provide materials which conform to the rigid and artificial criteria of readability formulae is misguided, and should be resisted. If editing to readability formulae results in texts that are less interesting and no more difficult than what is already available in bookstores and public libraries, then it is a very risky business, as it is potentially boring to read materials with little or no syntactic or lexical challenge and even less stylistic variation. There is evidence (Green, 1982a; Green & Laff, 1980) that children attend to and appreciate stylistic differences. It would seem to follow that expecting them to read "simplified," style-neutralized, Muzak texts is, to say the least, inconsiderate. At best it is pointless; at worst, it is counterproductive. It wastes valuable time that could be spent in more profitable ways and risks boring the children and conveying to them that there is nothing interesting to be gained from reading books, or even from school. It seems possible that Johnny does not learn to read because there is no thrill in being able to read the adaptations of stories that constitute the reading books. A significant part of the problem of teaching

children to read may be motivation: It may be that they would do better on more complex, more difficult, more challenging material, since successfully meeting a challenge is itself a source of pleasure and satisfaction.

Furthermore, having only style-neutralized adapted materials to read also deprives children of an opportunity to learn in a natural way the complexities of syntactic and lexical manipulation (Green, 1982b) that constitute style, and contribute ubiquitously to the task of interpreting text as intended by the author. If children are not exposed to unfamiliar words and syntactic constructions because they are "too hard," how are they supposed to ever learn to deal with them? A child who is not exposed to the wealth of literary usages and devices, and to a variety of writing styles in school, and who does not read much independently, may be seriously handicapped in understanding texts written in styles at variance with the prose of the homogenized texts that have been his primary model of written text.

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Footnotes

[1]By literary texts we mean not just works adjudged by critics to have special merit, but any story written just to be a story, and not, for example, intended specifically for use in a reading instruction program.

[2]In fact, answering almost any question required making some inferences, for example, to answer LH question 1 from the SHP sentence cited, the reader must know who he refers to (the antecedent Little Hippo occurs in the previous sentence), and that getting up usually follows waking up. Likewise, to answer BDH question #9, the reader must infer that the baker invited Benjy in BECAUSE he missed his cat (BECAUSE she ran away).

[3]This is probably due to the nature of these two questions as opposed to the other three. Questions 4 and 10 both ask "Why do you want to read that one?," which is essentially the same as asking, "Why do you like that one better than the other?" Since most 7-year-olds know what they like and don't like, this is presumably a relatively easy question for the children to answer. The numbers support this claim: of the 56 who answered #4, 37 responded informatively; and of the 53 who answered #10, 40 gave informative responses. Question #6 asked which version was harder--again a fairly straightforward question. It asks for a simple evaluation, which 41 of the 54 children who responded were able to give in a straightforward, informative manner, indicating that they had little difficulty with this question.

But questions 8 and 12 asked for judgments about what makes one version more exciting/interesting, requiring a more subtle

analysis of the differences between the versions, thus calling for more thought and more specific answers. Presumably, therefore, these questions were more difficult to answer. Significantly, 21 subjects who answered #4, 6, and 10 with ease could only say "I don't know" to #8 and 12, or they simply listed an incident and confused the versions or failed to differentiate between them. These children, then, succeeded in saying what they thought was exciting/interesting about the story, but made no significant comment about the differences between the versions.

[4]On the other hand, to anyone concerned with teaching literature and appreciation of literary style (cf. Green, 1982a), it must be depressing that the most able students preferred the adaptation to the original.

[5]In fact, we had to add two sentences to the original of SHP to substitute for information that was carried by illustrations. We added But they were full of hippos, who called out after He raced to the flowering trees, and added he said. The water was full of hippos, who called after "I'll hide in the river," he decided. We also deleted, from a paragraph about where different animals hid, the words Pottos curled up in trees, and because even we were distracted by not knowing what pottos were.

Table 1

Properties of the Texts Used in the Preferences and Comprehension Studies

Title	Version	Publisher	Length	Fry	Spache
The Secret Hiding Place (SHP) by Rainey Beckett	original	Collins-World 1960	812	3	3+
Little Hippo (LH)	adaptation	Laidlaw 1976* Toothless Dragon	738	1	2.2
Benjy's Dog House (BDH-or.) by Margaret Bloy Graham	original	Harper & Row 1973	823	2	3
Benjy's Dog House (BDH-ad.)	adaptation	Harper & Row 1977 Wings & Wishes	633	1	2+

*A different adaptation appears in Houghton-Mifflin Secrets.
Length is in words.

Table 2

Format Properties of Materials on Which Preference Ratings Were Made

Story-Version	Line Length	#/Lines	Characters/Inch	#/Pages	%/Story
SHP-or.	75	37	12	1	39%
LH-ad.	59	43	10	1	38%
BDH-or.	53	48	10	1.3	49%
BHD-ad.	53	32	10	1	43%

Table 3

Comprehension Question Types, by Story and Version

Story	# of Questions	% Sentence-Meaning		% Paragraph Meaning		% Inference	
		N	%	N	%	N	%
SHP-or.	14	3	21	6	43	5	36
LH-ad.	14	1	7	5	36	6	43
BDH-or.	22	11	50	3	14	8	36
BDH-ad.	22	11	50	3	14	8	36

Table 4

List of Preference Questions

3.	Would you want to [finish] the yellow version, or the green version?
5.	Which version do you think is harder to read?
7.	So far which one do you think is more interesting?
9.	If you were going to choose one of these to read again sometime when you wanted to read a good book, which one would you want to read?
11.	So far which one is more exciting?
13.	Which version of the story did you like best?

Table 5

Overall Preference Ratings

Qn. #	Content	Prefer Original N	Prefer Original %	Prefer Adaptation N	Prefer Adaptation %
3	Want to finish	33	58	23	40
7	Interesting	33	58	24	42
9	Read again	30	53	23	40
11	Exciting	26	46	26	46
13	Like best	33	58	20	35
14	Finished	29	51	25	44

Total N = 57

Table 6

Preference Ratings: SHP/LH

Qn. #	Content	Original N	Original %	Adaptation N	Adaptation %
3	Which to finish	17	61	11	39
7	Interesting	14	50	14	50
9	Read again	14	50	12	43
11	Exciting	12	43	13	46
13	Like best	14	50	12	43
14	Actually finished	15	54	12	43

Table 7

Preference Ratings: BDH

#	Question Content	Original N	Original %	Adaptation N	Adaptation %
3	Want to finish	16	55	12	41
7	Interesting	19	66	10	34
9	Read again	16	55	11	38
11	Exciting	14	48	13	45
13	Like best	19	66	8	28
14	Actually finished	14	48	13	45

N = 29

Table 8

Preference Ratings of Subjects whose Answers to Questions 3, 9, 13, 14 were Consistent

	Prefer Original		Prefer Adaptation		Total n
	N	%	N	%	
Overall	19	63	11	37	30
SHP/LH	8	42	6	55	14
BDH	11	58	5	45	16

Table 9

Responses to "Which version did you like best?" by Ability Group, All Subjects

Ability Group	N	Prefer Original		Prefer Adaptation	
		N	%	N	%
OVERALL					
Low	18	13	72	5	28
Med	17	12	71	5	29
High	18	8	44	10	56
LH/SHP					
Low	8	4	50	4	50
Med	8	5	62	3	38
High	10	5	50	5	50
BDH					
Low	10	9	90	1	10
Med	9	7	78	2	22
High	8	3	38	5	62

Responses to "Which version did you like best?" by Ability Group (Consistent Subjects)

Ability Group	Prefer Original		Prefer Adaptation	
	N	%	N	%
OVERALL				
Low	5	71	2	29
Med	9	82	2	18
High	5	42	7	58
LH/3HP				
Low	1	33	2	67
Med	4	80	1	20
High	3	50	3	50
BDH				
Low	4	100	0	0
Med	5	84	1	16
High	2	33	4	67

Table 11

Responses to "Which version did you like best?" by Ability Groups (Ability Sorted According to Comprehension Score)

Ability Group	Prefer Original		Prefer Adaptation	
	N	%	N	%
OVERALL				
Low	6	46	7	54
Med	13	57	10	43
High	11	65	6	35
LH/SHP				
Low	1	20	4	80
Med	5	38	8	62
High	6	75	2	25
BDH				
Low	5	63	3	37
Med	8	80	2	20
High	5	56	4	44

Table 12

Mean Comprehension Scores, Comparing Versions, Stories, and Versions Within Story

Group	# of Subjects	% of Questions Answered Correctly
OVERALL	49	55.63
Orig.	25	55.00
Adap.	24	56.29
SHP/LH	23	48.91
Orig.	13	47.62
Adap.	10	50.60
BDH	26	61.58
Orig.	12	63.00
Adap.	14	60.36

Table 13

Mean Comprehension Scores for Each Ability Group

Group	# of Subjects	Mean	Percent Correct
OVERALL			
Low	14		40.14
Orig.	6	41.50	
Adap.	8	39.12	
Med.	17		54.29
Orig.	7	52.10	
Adap.	10	57.43	
High	18		68.94
Orig.	9	67.22	
Adap.	9	70.67	
SHP/LH			
Low			26.50
Orig.	3	22.00	
Adap.	3	31.00	
Med.			46.25
Orig.	4	37.25	
Adap.	4	55.25	
High			66.22
Orig.	6	67.33	
Adap.	3	64.00	
BDH			
Low			50.37
Orig.	3	61.00	
Adap.	5	44.00	
Med.			61.44
Orig.	6	62.00	
Adap.	3	60.33	
High			71.67
Orig.	3	67.00	
Adap.	6	74.00	