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ACQUIRING PRINT FLUENCY CONCURRENTLY WITH FIRST LANGUAGE SPEECH FLUENCY

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Soderbergh (1977) and others have proposed that reading and writing (print fluency) should develop in parallel with understanding and producing speech (speech fluency). The arguments advanced include the proposal that the toddler ages of two to four are critical years for the development of any language or dialect of language including the print dialect. Other proposals stress more the assumption that toddlers are more receptive, more adaptable, more delighted with language learning and thus print literacy can be acquired with less negative affect than at later ages (Donm, 1964). Others accept a more pragmatic stance suggesting that the process can be done, and thus provide early quality entertainment for children whose parents cannot spend time reading to them (Ledson, 1975).

There is already evidence that some children who are provided fifty or so net hours of intensive experience in processing of print can learn to read at levels approaching their level of speech. This means that a three-year old can learn to read third grade materials and a five-year old can learn to read fifth or sixth grade books.

The long-term effects of attaining print fluency levels that equal speech fluency levels at these early ages are not known. The only data available have been case study reports. Durkin (1966) found evidence of enduring advantages associated with pre-school reading skill, but the children observed were self-selected in that for whatever reasons, advantage or unusual circumstance, they entered school already reading. Moore (1972) has reported on a group of inner-city children who acquired reading and writing skills before four. It is very difficult to assume that these children had any advantages over the general population that would have made them able to demonstrate precocious reading. On the contrary they were drawn from a population that usually experienced substantial failure in the conventional reading programs of the school. However, the sample was not sufficiently large or randomly drawn so as to provide assurance that any toddler using speech is capable of attaining a comparable level of print fluency when provided with fifty or so hours of effective print experience.

It has been the purpose of seven studies to answer a number of questions related to the proposal of concurrent learning of speech and print.

The first question is that of general feasibility. Can any speaking child, and thus almost any child of age two and beyond, acquire fluency in print? At the level of the speech fluency of that child?
Traditional developmental theory suggests that there is inadequate development of one-to-one correspondence processing for reading and inadequate development of serial processing for writing to occur in average two and three-year-olds. In contrast, language development scholars suggest that ages two to four are a critical, or at least an especially receptive period for development of print skills. To resolve this dilemma, we must gather data from children that might represent the general toddler population. We must also provide these toddlers with print experience that will be effectively involving since Gates and Barns (1936) suggested nearly fifty years ago that by thoughtful design of teaching method, the traditional age-related limits on learning to read can be greatly lowered or removed. Our question is, can they be removed for the typical two-year-old toddler who is acquiring speech?

Other questions to follow.

They include questions regarding the relative advantages and problems of parallel introduction of spelling. Related problems include phonic strategies, orthographic strategies, system versus child-structured content and ecological validity of the writing task.

Another set of questions is related to the consequence of any discovery of age-related differences. If they are found then how can they be understood and what implications are there for instruction at each early age.

Finally, there is the question of the influence and capability for instruction of the parents since very few twos or even threes or fours are found outside the home in pre-school institutions. If parents do not teach them, they will not be taught.

Methods:

The methods of this series of studies as seen in retrospect have progressively focused on younger and younger children. They have employed a variety of instructional strategies and materials with the overarching common question being to discover the age-related limits of toddler ability, given the most effective known instructional methods.

Study 1. Moore (1972) had demonstrated the effectiveness of the talking typewriter. Doman (1964) had urged a sight method based upon names of salient persons and objects in the very young child's environment. Lee and Black (1981) developed a series of thirty typing lessons as Moore proposed, for Steven Lee, his five-year-old son. Lee began using familiar vocabulary as Doman proposed, but immediately added self-selected simple sentence structures and phonetically related word sets. The vocabulary content was predominantly determined by his son with the father occasionally adding phonetically related words as a game.

Words were printed and presented on 3 x 5 cards. They were then initially typed by the father as a demonstration until the boy learned
the key locations. Then the boy typed the word. The word was then practiced as the boy typed sentences that used the word. The father spent fifteen minutes a day demonstrating new words, dictating practice sentences, prompting and correcting. The boy typically practiced alone another fifteen or thirty minutes.

The typewriter used was an IBM Selectric equipped with erasure key which the boy used as needed. Figure 1 is a demonstration of typing from oral dictation after three months of practice. The boy spelled correctly some three hundred words. He used punctuation conventions, including capital letters, periods and commas. He was able to correctly decode most printed words he encountered. He typed using the touch method which he insisted on using after three weeks.

In a period of some forty hours of undistracted print experience, the child developed substantial word attack skills, impressive spelling and typing skills.

It should be noted that the child's first language was Korean and the older brother had already encountered some failure in school reading programs. The father was a linguistics student. He was patient but persistent. Praise was liberal but perfection was expected leading to regular use of the correction key.

Conclusion: This demonstration was amazingly successful. The typewriter plus parent strategy was most effective. A method focusing on writing succeeded in yielding reading skills as a by-product. We had another anecdote but no representative sample. We had a highly effective method controlled by child and parent. However, we did not know what much younger children could do.

Study II. The question now was whether much younger children could be equally successful.

A series of workshops were organized for parents. The Lee-Black method was described. Parents were invited to attempt the same system with children ranging from two to five. There was a follow-up after a period of three months during which the parents attended monthly workshops.

In this series (Black & Hilton) it was observed that children at all age levels including a 22-month-old child made progress. In no case did the rate of progress approach that of Steven Lee who had averaged about three new words per day. The averages were closer to one word a day which approaches that of first graders.

Because of the slower rate of progress, none of the children reached the level of readily decoding or encoding unencountered words in the three months of the study.

Final interviews revealed two probable causes. One was that parents had not provided instruction faithfully. In fact, not more than 20% of the parents provided as much as an average of 10 minutes per day. The
reason given for such low effort by parents were frequently complaints about typewriters (many of which were mechanical), disruptions related to illness or visits or vacations, or resistance by the child.

The second possible problem was an apparent age-related problem such that while some of the youngest children made good progress, in general the younger the child, the greater the likelihood of failure.

Conclusion: This uncontrolled set of one hundred case studies showed that some children of every age level could learn to read and spell significant numbers of words approaching the number usually learned in the first grade. However, many at each age level essentially aborted for a wide variety of reasons. It seemed that the greatest problem was the delivery system (parents and mostly mechanical typewriters) and not the children. However, it appeared that our methods needed to be tuned better to the very youngest children.

Study III. Our two problems we chose to investigate next related to the delivery system and the age variable. We decided to compare parents given regular and well-defined instructions with para-professionals equally instructed. Secondly, we selected eighteen children whose ages ranged over the two to five range.

We provided all children with two weeks of parent instruction and two weeks of para-professional instruction. Our para-professionals used IBM Selectrics. Parents used whatever typewriters they had. The results were that para-professionals obtained high gains while parents obtained very minimal ones. Furthermore, except for the children below three, there were no age differences. For the youngest children, the reading scores were modest and the writing scores approached zero.

Conclusion: Although the parents were college students and enthusiastic volunteers for the study, there was found again a very high failure rate related to the low reported level of targeted typing practice. When para-professionals taught for 10 minutes a day there were impressive gains except for the twos. These gains were obtained on both reading and spelling measures.

Study IV. The question of greatest concern was how to improve parent effectiveness. If only ten or twenty percent of apparently motivated and highly educated parents could or would invest ten minutes a day to the program, then there would be minimal likelihood of any significant number of twos or threes ever being taught.

We (Bergin, Kowallis and Black, 1981) decided to compare the effects of highly motivated (cf Weight Watchers) seminars and regular home demonstration visits (cf Levenstein, 1971) with the effects of a manual and kit only.

The manual was conceptually simplified to more clearly resemble a language experience approach. Phase one consisted of introduction of family names, pets, favorite toys and any other favorite person or
thing. Phase two introduced a few action verbs with suggested games involving sentences made of phase one nouns and phase two verbs. Phase three included predicate nouns and adjectives involving clothes, food, toys and household objects that would create a third word in the sentence. Finally, words consisting of functors including prepositions, articles, modals and some adverbs defined phase four. These words were to be added to prior words in sentence context as naturally and unobtrusively as possible.

The manual gave rationale, examples and learning games. A kit was also supplied consisting of a simulated keyboard consisting of pockets holding letter cards which could be easily removed to "type" words.

A cross-section of community mothers participated.

The results showed appreciable success for all parent groups with the manual-only group performing as well as the motivational plus demonstrative plus manual group.

Performance of children was very similar to our previous result in that there was first-grade level progress for all but the twos on both reading and spelling.

Conclusion: The parent problem seemed to be at least partially solved by providing manuals and materials which were easy to use and interesting to children. Extraneous motivational supports were not required by these already motivated parents. What was effective was a simplified teaching approach which gave more control to child and parent. It also avoided the mechanical problems associated with most typewriters.

There remained the question regarding the marginal or failing performance of the twos. Why could they talk but not write?

Study V. It was not clear what the effect of concurrent write (spell) and read (recognition) was. Was it symbiotic with the processes assisting one another? Was it interfering or were they independent?

A further question was whether our consistent success across the two to five range could be maintained in a non-collegiate area.

We (Stewart & Black) determined to work in a public day-care nursery where mothers worked in mostly industrial and service vocations and had no more than high school education. There were 18 children participating, ranging from two to five.

There were three groups, one receiving all reading, another all spelling and a third both reading and spelling. All children received fifteen minutes daily for two months.

The instruction generally followed the Bergin, Black (1981) manual. However, it was decided to adapt methods to individual needs as much as necessary to get as near one hundred percent involvement in the target
task for the fifteen minutes. Thus one child used a typewriter, another preferred a crayon, and a third traced in sand. Similar adaptations were made to suit each child's preference in the reading instruction, including a variety of word games and even sweet treats for children who would otherwise lag. Using these individualized (diographic) rather than a fixed (nomothetic) approaches, the task-oriented behavior was relatively high and uniform for a given age for all children for their entire 15 minutes.

The results for reading revealed a very consistent \( r = .93 \) effect associated with age showing a modest but steady increase in performance over age level. The difference between those receiving 15 minutes reading and divided reading and spelling was very reliable and favored the 15 minute condition.

The results were similar for spelling but somewhat less reliable.

Conclusion: These findings showed a powerful age-related effect with no discontinuity between the twos and fives. Twos could perform reliably, but with somewhat less success than older children. The data also strongly suggest that twos or any other younger age level can equal the performance of older children if the total instructional time is modestly increased. This leads to an assumption that the age-related differences are not related to any general or verbal aptitude but to the culturally influenced tendency of fives to find print more socially relevant than do twos; thus they attend more effectively to the task. Fifteen minutes with a five may yield close to fifteen minutes of effective print processing, while fifteen minutes with a two may yield closer to five. However a dedicated parent could enable the two to equal the learning pace of the five if added training sessions were undertaken to bring the effective total time on task up to the level of the five.

These very consistent results seem to be very much influenced by the adaptable (idiographic) approach of the tutor. In all previous studies the method was adaptable in some respects but rigid in either vocabulary, medium such as typewriter, or method such as phonetic emphasis. In this study an entire menu of strategies were engaged with the only restriction being that they maximized apparent time on task and that the task be print processing.

Study VI. Stewart & Black (1982) showed that a month of instruction could yield significant learning by twos, that more instructional time could increase their performance and that this could happen among children from homes where print was very little in evidence. However, the numbers of twos in that study were only four. A larger sample would be needed to add confidence to these findings. Furthermore, the twos seemed to be far more successful with reading than with the spelling task.

In this study Tang and Black (1982) selected 18 twos distributed evenly over each age quarter from first to fourth quarter twos. They were
children of college students who volunteered to participate. The method chosen emphasized spelling with stress on phonetic sounds of the component letters. The words were selected from the Peabody Picture Vocabulary List including only those that were most frequently recognized by a pilot group of twos.

In this study all children (except one who refused to talk to the experimenters) made regular progress over the eight weeks.

There were significant differences between age levels. Children were taught either 7.5, 15 or 30 minutes. Differences were obtained between them with some evidence that although 30 minutes was most effective, fifteen minutes was most efficient.

Variance among children was most associated (r = .84) with experimenter estimates of minutes of task involvement for each child. Thus those who apparently attended most were those who learned most of both reading and spelling items.

**Conclusion:** This study is the most conclusive yet in confirming that twos can acquire print skills. It strongly suggests that at least for the level of reading and spelling attempted that the major factor influencing learning is the learner's time on task. This can be influenced by extending instructional time, but a fifteen-minute session seems to be most efficient for a single session. Extension requires multiple sessions per day rather than large single sessions.

Study V suggested that time on task is greatly influenced by adapting instruction to idiosyncracies of the child's interests.

At the limited fluency level attained in the present series of studies it appears that for twos reading and spelling are acquired as independent skills.

It is assumed, however, that a modest increase in instructional time will bring the child to the level at which phonetic and graphemic generalizations made in spelling will facilitate phonetic decoding in reading as was observed in the case of Steve Lee.

Extrapolating across all our studies and the cases reported in the literature there seems to be a consistent requirement of some fifty hours of directed on-target processing to attain a level of functional literacy with at least phonetic writing. These hours are an accumulation of highly effective minutes which for some are spread over many months of brief but effective interludes (eg. Soderbergh). For others they are intensive sessions repeated several times a day (eg. Lee & Black, 1981 and Ledson, 1975). For some each session is highly efficient (Stewart & Black, 1982), and for others it may be filled with distractions and barriers which can slow progress at any age to zero.

**Projection:** Underway are two studies which will extend our present vision of the achievements of only the first two months of instruction.
until we can observe the development of rule-based encoding and decoding. We are finding that phonetic and graphemic skills begin to emerge after ten to twenty hours of effective time on task by the child.

We are also developing computer-based games which are designed to enable even the twos to acquire levels of print fluency equal to their speech fluency.

Conclusion: Our evidence supports the claim that under conditions that encourage the processing of print that all speaking twos can acquire print skills at rates that approach first grade expectations. That is about a word a day during the first weeks given ten minutes per day of targeted processing by the child.

It is also clear that parents can be effective instructors with very minimal direction. However, for a variety of reasons most abort the process.

Finally, these data relate only to the initial stage which is highly rote-like in character. Data is now being gathered which suggests that rule-based phonetic-graphemic skills are developed readily at all ages shortly after some twenty hours in stage one.