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SOUND AND SYMBOL: THE INITIAL TEACHING ALPHABET APPROACH TO CHILDHOOD SPEECH AND LANGUAGE PROBLEMS

by

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to rite

Who, for me, has taken the Initial Teaching Alphabet out of the realm of theory into the realm of reality.

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INTRODUCTION: AN OVER-VIEW

In the English language, twenty-six alphabet symbols are used to represent approximately forty sounds. Two types of inconsistencies in English spellings result: (1) the representation of the same sound by a variety of spellings, and (2) the use of the same spelling for a variety of sounds.

For several hundred years various movements, and many individuals, have sought to revise the spelling of English, in the direction of a more systematic relationship between its sounds and its written symbols.

In 1961, the Initial Teaching Alphabet was introduced by Sir James Pitman, in England. It is a transitional alphabet, whose purpose is to provide a more consistent relationship between sounds and symbols in order to make the task of learning to read easier. i.t.a. keeps all the traditional letters of the alphabet except q and x. It then adds new ones, so that for each phoneme, there is a written symbol, thus providing visual-auditory consistency. Current research seems to indicate that the use of i.t.a. does indeed make learning to read an easier task.

Since i.t.a. is not a method, but an alphabet, it might well be possible to use it in other areas, such as

speech therapy. An auditory-vocal-visual-graphic approach, since it provides multi-sensory avenues of stimulation, association, and reinforcement, should be an effective means of bringing about improvements, for example, in articulation. In speech therapy, however, as in reading, children are confronted with a lack of relationship between sounds and symbols that makes written symbols confusing to the young child, and thus limits their usefulness. Since the i.t.a. improves phoneme-grapheme relationships, it is hypothesized that its use in the area of speech and hearing problems should provide an auditory-vocal-visual-graphic approach that would make articulation therapy more effective than traditional auditory-visual approaches. Research was needed to test such an hypothesis.

An investigation was made, using matched groups of second graders in a public school speech therapy program. The children in the control group, using traditional orthography in specially prepared materials for articulation therapy, and the children in the experimental group, using the same materials transliterated into the Initial Teaching Alphabet, were matched on the basis of chronological age, sex, number of therapy sessions per week, number of defective sounds, and specific sounds misarticulated. They were given articulation tests at the beginning, and at the end of the school year. The results of this investigation are reported and discussed.

In addition to the rationale for the use of i.t.a.

in speech therapy, and a discussion of its proposed advantages, this report also includes full discussion of the individual i.t.a. characters and some possible problems and disadvantages of their use in an area other than that for which the Initial Teaching Alphabet was originally formulated.

Summaries of other projects that have used i.t.a. are included in this report, as well as related comments and materials that might be useful for further needed research in possible utilization of the i.t.a. in therapy programs for speech, language, and hearing handicapped children.

CHAPTER I

SPEAKING, READING, AND WRITING IN THE ENGLISH LANGUAGE

Some General Aspects of Language

Language may be defined as a structured system of arbitrary symbols that catalogue the objects, attributes, events, and relationships that have meaning for persons in a particular cultural community. We are concerned in this study with the two primary aspects of language: (1) its systematized combinations of sounds, and (2) the graphic representations of these sounds. The ability to use language, in any given cultural community, depends upon the recognition and control of the structural patterns of the language.

Mountford (1964) points out that the whole structure of the language is in play when we use it, whether in spoken or in written form.

The basic unit of the oral structure of language is the phoneme, which is defined by Bronstein (1960) as a sound that is significantly different from the other sounds of the language.Phonemics, then,is the area of linguistics that is concerned with identification of the significant sounds of any given language. Allophones are minor variations of a sound. Bronstein (1960) says:

> Allophonic variants, when substituted for

> each other, do not make for meaningful differences in a word. Phonemically different sounds, when substituted for each other, do make for meaningful differences. (p.26)

The phoneme is a concept of a unit of sound, because it is an abstraction. It is an idea of a sound, quite distinct from any actual sound (Hughes 1962). The actual sound emitted by a speaker in an effort to realize this concept may be called the phone, and is the basic unit of the science of phonetics. Phonemics represents a shift from the attempt at representing every identifiable sound to that of representing only functionally significant units. Sapir (1963) says that the phoneme is a functionally significant unit in a rigidly defined pattern of sounds peculiar to a language, as distinct from that of the "sound" or "phonetic element".

Kantner and West (1960) discuss some basic principles of phonemes that include noteworthy points. Any speech sound is composed of a variety of auditory characteristics. These auditory characteristics vary from person to person and from utterance to utterance in the same person. However, in regard to perception, these differences are not significant in terms of meaning.

As phonemes are the basic units for spoken language, graphemes are the basic units for written language. Structural linguists, according to Sebasta (1964), recognize the primacy of spoken language, describing written symbols as

an approximation of speech. DeSaussure (1959) says that spoken language and writing are two distinct systems of signs, the second existing for the sole purpose of representing the first.

Gleason (1961) says written language is a reflection of spoken language. As a picture of actual speech, it is imperfect and incomplete. According to Bronstein (1960), the written form of a language uses a system of letters or shapes to represent the sounds of speech. Thus writing represents spoken language, letters represent sounds, and combinations of letters represent words.

Development of the English Alphabet

Vendryes (1952) points out that writing was originally a kind of magic; the first writers were sorcerers, and written language for a long time preserved this character. Goldberg (1957) also refers to the magic character of writing. He says that the noun "spell" is used as a designation of a magic formula, and affords evidence of the power that is concentrated into words.

The earliest, pre-alphabetic written symbols directly represented objects, persons, and events (Brown, 1958). Such writing obviously became inadequate for the needs of an increasingly complex society. Thus pre-alphabetic picture-writing was conventionalized, and the pictures gained phonetic values. Some of them came to stand for single consonants. In some languages, vowel sounds also

came to be represented. According to DeSaussure (1959), there can be two types of writing systems. The first is ideographic, in which each word is represented by a single sign that is unrelated to the sounds of the word itself. The second is phonetic, in which the writing system tries to reproduce the succession of sounds that make up a word. Ideographic systems can freely become mixtures when certain ideograms lose their original values and become symbols of isolated sounds. The evolution of some of our own alphabetic symbols illustrates how this could happen. The word alphabet, according to Goldberg (1957) comes from the Greek. It is made up of the first two letters in the Greek series, alpha, and beta. These came originally, it is believed, from the Semitic tongues, in which alpha meant ox, represented by  , a picture of an ox, and beta meant house, represented by  , a picture of a house.

Except in pictographic or ideographic languages, the written alphabet as it develops is an attempt to symbolize visually the speech sounds that have already been in the language for a long time (Kantner and West, 1960).

One of the problems of the relationship between written and spoken language is that language systems generally have more sounds than signs. Thus, according to Vendryes (1952), no orthography has ever exactly reproduced the spoken language. If such an orthography could be devised, we would have what Hughes (1962) would call a perfect alphabet. He says:

> ...The basic principle of alphabetic writing is to devise one separate sign, and one only, for each phoneme of the language. When there is a 1:1 correlation between the number of signs and the number of phonemes in the language; when a given sound is always expressed by the same letter and no other; when there are no digraphs (two letters to express one sound), nor cases of the same sound being expressed by different letters (alternate spellings), then you have the perfect alphabet. (p. 141)

According to Van Riper and Smith (1962), most scholars feel that the first form of our alphabet originated about 4,000 years ago, when the Phoenicians modified some of the symbols of the Egyptians to fit their Semitic language. This alphabet had symbols for consonants, but it had none for vowels. The Greeks, who took their alphabet from the Phonetians, had only one symbol to represent each sound. When the Romans conquered the Greeks, they took over the Greek alphabet, without adding any symbols to represent additional Roman vowel sounds. They thus had to use five letters for ten vowel sounds, which meant that written symbols for vowels could represent more than one sound.

In the sixth century, Christian missionaries began to use characters of the Latin alphabet to represent native speech sounds. Thus, according to Kantner and West (1960), each character at this time came to stand more or less accurately for a given sound (according to the phonetic knowledge of the missionaries). In the North, the Latin alphabet came into contact with the old Runic alphabet, which added the "thorn" - θ - and the "crossed d" -ð - to the English language (Gray and Wise, 1959). The Latin

alphabet consisted at one time of twenty-one letters. y and z were added to provide for new phonemes introduced through Greek loan words. Three letters, j, v, and w, are medieval or modern additions (Gleason, 1961).

From a historical point of view, not only the characters changed, but so did their use in the spellings of words. It was not until the introduction of printing that general conformity in orthography was established. But printing in itself led to much confusion, because of the varieties of words and spellings used by individual printers. Since many of the early printers were not even English, but Dutch, they sometimes added letters or changed spellings, according to their own notions of how words similar in the two languages should be spelled.

Malone (1962) reports:

> Over the 700 or 800 years English orthography has been developing, a number of scribes, printers, and users of varying intelligence, background, knowledge, and insight, have striven to devise "make-do's" for this task, each time using the inadequate Latin alphabet. In many cases they have only succeeded in confusing the issue, reflecting a local dialect, or using an unnecessary device. (p. 436)

Many of the alphabet changes were the result of the acceptance of the leadership of various persons. Kantner and West (1960) say,

> Out of this changing letter form, the wielders of the stili, quills, chisels, brushes, pencils, and pens have accepted and formalized a set of symbols that is broadly logical in its phonetic symbolization. (p. 240)

They go on to say that the fact that at the present time the writing falls far short of representing English sounds means that the auditory symbol units have changed at a more rapid pace than the visual symbols. They feel that the reason is largely due to a difference in permanence of the two types of symbols. Auditory symbols, unlike graphic symbols, are gone the instant they are produced. (In modern times, of course, we are able to capture them through recordings.)

Pitman (1966) says:

> Thus some four hundred to five hundred years ago, by accident and with no design save in many cases a tendency to preserve an etymological rather than an alphabetic relationship, arose the chaotic disrelationship between print and the speech which print was intended to represent. The passages of time and the changes in pronunciation of such sounds as had been more alphabetically represented has since worsened even that ancient chaos. (p. 8)

We may summarize this section with an observation of DeSaussure (1959),--that the pronunciation of a word is determined, not by its spelling, but by its history. The form of a word at a particular moment stands for a moment in its enforced evolution.

Problems of Modern English Orthography

Hall (1964) in discussing sound and spelling, says:

> The degree of correlation between two systems of any kind is known as the fit which they manifest (the extent to which one fits the other). The closer the correlation, the more perfect the fit.... In a perfect fit between grapheme and

> phoneme, there are exactly as many graphemes as there are phonemes. Imperfections of fit can be caused either by an insufficient number of graphemes for the phonemes to be represented; or by an excess of graphemes over phonemes; or by the inconsistent use of graphemes. English orthography suffers from all three of these defects. (p. 45)

Since 1775, when Samuel Johnson published his Dictionary of the English Language, spelling has changed in only minor ways. So, according to Van Riper and Smith (1962), in our language one letter may represent as many as eight different sounds, and one sound may be spelled in possibly fifteen different ways. In comparing English to other languages, Pei (1958) says that it is in a class by itself. French is almost as irregular as English, but its irregularities are more systematic. Malone (1962) cites German, Russian, Turkish,[1] Japanese, Spanish, most Scandinavian, and Italian and Portuguese, as having closer phoneme-grapheme fit than English.

It is particularly in the area of reading instruction that English-speaking children have a disadvantage. Van Riper and Smith (1962) say, "Millions of little children learning to read have been forced to suffer because of the confusion built into our language." (p. 3)

Bruni (1960) discusses Italian methods of teaching reading, and compares them with French and English methods.

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[1] Spelling reform was undertaken in Turkey in the 1920's under the dictatorship of Kemal Ataturk, when the Roman alphabet was substituted for the older Arabic writing (Hall, 1964).

His authorities say that Italian children can easily learn to read in six to ten months. Tauber (1968) cites information given by a Japanese child psychiatrist, Dr. K. Makita, who attributes the rarity of reading disability (less than one per-cent) among Japanese children to the fact that though the Japanese language uses ideographs like Chinese, it also uses a syllabic phonemic script in addition. According to a Netherlands authority, since the Netherlands government reformed Dutch spelling in 1904, the average child learns to read in about three months (Boutwell, 1964).

The reason most often cited by Norwegians for the low incidence of reading difficulty among the children of Norway is the phonetic regularity of the language (Douglas, 1969).

Bronstein & Bronstein (1965) say that languages that are represented by a writing system in which the graphemes are highly consistent with the phonemic forms of the language (such as some of these discussed) create fewer reading hurdles than do those languages (such as English) in which the writing and the phonemic systems are not so close.

Downing (1963) comments on problem solving, learning to read, and language complexity. He says:

> ... The problem solving which Finnish children have to do in order to learn to read seems to be essentially one of discovering simple systematic relationships between phonemes and the symbols by which they are represented

> in print. For children in English-speaking countries the task is quite different since English spelling does not represent such a simple system. (p. 323)

In addition to the lack of phoneme-grapheme fit in many English words, English orthography is also characterized by the presence of numerous unused, silent letters. These may be letters formerly pronounced (as the t in listen), or in anglicized loan words. Every letter in our alphabet (from a in head, to z in rendezvous) is sometimes silent. Hall (1964) says:

> A special case of excessive use of graphemes in proportion to phonemes is the representation of phonemic zero. The only sensible representation for phonemic zero is, of course, graphemic zero- not writing a letter where it does not correspond to anything pronounced.... For the most part, these "silent letters" are a heritage from the late Middle Ages and the Renaissance, when scribes (who were paid by the page) used to add extra letters in order to pad out the text and increase the number of pages... (p. 271)

Tauber (1958) refers to the terms "heterography" used by Dewey, in How We Spel, English Heterography, and "cacography", used by Trumbull, to describe English orthography.

Orthographic irregularities keep children from recognizing in print hundreds of words which they use in conversational speech. Alpert, Tanyzer, and Sandel (1968) state that

> ...Complexity in the printed language medium makes it difficult for the young child to associate symbols and meaning, to see and remember essential differences

> between elements, and to associate symbols and sounds. (p. 67)

Van Riper and Smith (1962) say,

> Our English alphabet, as a tool for indicating the pronunciation of the spoken word, is woefully inadequate. When we have to teach correct pronunciation to speech defective children, or to foreigners, we realize vividly how inadequate our alphabet is. (p. 1)

Labov (1968), in discussing problems of language in ghetto areas, said, "There is more difficulty of a purely alphabetic nature. It leads to an effect of a loss of confidence in the use of the alphabet." (p. 101)

Jenkins (1968) said,

> It may be...that we get an enormous "turn-off" with the orthography. Every time the orthography is out of whack, it may kill some child's hypothesis that could have grown up into being a nice personal theory about invariance in language. (p. 219)

Spelling Reform

The foregoing review, concerning the nature of oral and written language in general, and of the English language in particular, has been given as background to the discussion of the formation of the Initial Teaching Alphabet. The i.t.a., as a new medium for reading and writing, was not an attempt at alphabet reform. However it owes much to the history of spelling reform.[2]

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[2]The title of a paper given by Godfrey Dewey (1968) characterized i.t.a. as "...not spelling reform, but child and parent of spelling reform."

According to Block (1968),

> Of the literally hundreds of artificial alphabets which have been designed in the past, none has developed so carefully and systematically over so long a period of time out of such a fertile background. (p. 1)

Attempts at spelling reform go back many years in the history of the English language. One of the earliest attempts was by Orm in the thirteenth century (Wise, 1957a). He developed a system of spelling that used single consonants after long vowels and double consonants after short vowels.

Van Riper and Smith (1962) give an interesting account of another early spelling reformer:

> In the time of Queen Elizabeth I there lived a remarkable scholar, Charles Butler, who devised a system of spelling and wrote several texts and grammars using it. But he was a protégé of Lord Essex, and when the Queen turned her affections elsewhere, Charles Butler lost favor, and his beautiful system of phonetic English was forgotten. (p. 3)

Another early spelling reformer was John Hart (Downing, 1965a). He attacked "the vices and faults of our writing; which cause it to be tedious, and long in learning; learned hard and evil to read." In 1570 he produced a reading book called A Methode or Comfortable Beginning for all Unlearned, Whereby They May be Taught to Read English In a Very Short Time, With Pleasure.

Spelling reformers may choose to try to improve the orthographic system in various ways: (1) by using symbols unrelated to the present alphabet symbols, (2) by borrowing

symbols from other alphabet systems, such as Old English ð , (3) by turning present alphabetic symbols in different directions such as ɐ , (4) by using diacritical marks, and (5) by augmenting, and deleting certain symbols in our present system. Benjamin Franklin advocated the latter. He wrote, concerning the alphabet, "Something or other must be done, or our writing will become the same with the Chinese as to difficulty of learning and using it." (Larrick, 1965)

According to the biography of Franklin, written by Van Doren (1957), Franklin turned his attention to spelling reform in 1768. As a printer and writer, he had observed the disorderly confusion of English spelling. As a beginning for his plan of reform, he felt that six of the letters (c, j, q, w, x) were unnecessary, and should be deleted. He then advocated augmenting the alphabet with other sounds that would be needed so that each letter would always represent the same sound, and there would be no superfluous letters.

Van Doren said:

> Franklin, having designed the new letters he proposed, reformed his alphabet in a phonetic order which he had worked out himself, obviously, by noting the part played by throat, breath, tongue, teeth, and lips in the pronunciation of various sounds. He did not distinguish all the sounds in English or provide for them, and he left "A scheme for a New Alphabet and Reformed Mode of Spelling" unfinished. But his analysis was as fundamental, if not as detailed, as any that has been made since. (p. 425)

Franklin viewed language as a whole, in which speech came first, then writing. He viewed as a great waste the

fact that children, who knew their English by ear, had to master by eye what he considered almost an ancient dialect. Franklin, according to Van Doren, was a thorough-going revolutionary in the matter of spelling reform, which he felt concerned everybody.

Another great reformer was Noah Webster, who wrote "An Essay on the Necessity, Advantages, and Practicality of Reforming the Orthography of Words Correspondent to The Pronunciation" (Tauber, 1958). His American Dictionary was responsible for such simplified spellings as labor for labour, theater for theatre, mask for masque, check for cheque, draft for draught, plow for plough, and others. He had proposed even greater reforms such as seen in the proposed words helth, frend, beleev, year, rong, and others, but he did not follow through on them in his dictionary (Pei,1952).

In 1837, Sir Isaac Pitman (the grandfather of Sir James Pitman, who devised i.t.a.) published his "Stenographic Sound-Hand" (Pei,1958).

According to Pei, Pitman's method of stenography emphasized to many scholars the deficiencies of English spelling and the advantages of phonetization. Isaac Pitman founded the Phonetic Society in England in 1843, and in his Phonographic Journal first proposed the idea of phonetic writing which he called "phonotypy" (Tauber, 1958).

Alexander Ellis, using Pitman's ideas as a basis, devised an "Ethnical Alphabet", which equated symbols with

sounds (Pei, 1958). Ellis and Pitman published material in phonotypy in The Phonotypic Journal (Downing, 1965c). Like i.t.a., phonotypy was a transitional alphabet, rather than a plan for complete spelling reform. Ellis put stress on learning to read as a basic objective (Tauber, 1958). Phonotypy was used in schools of Massachusetts in a study which reported that the phonetic print corrected the brogue of the Irish children and the Yankee dialect of the Americans in a surprising manner (Downing, 1965c). It was also used in Ohio, and was used by some missionaries. In Nova Scotia it became the basis for the hitherto unwritten American Indian language, Micmac.[3]

Ellis also developed what he called "Glossotype" for compiling glossaries of dialectal speech (Wise, 1957a). Benjamin Pitman, brother of Isaac Pitman, worked out a system which he called "The American Phonetic Alphabet" (Tauber, 1958). Ben Pitman produced the "First Phonetic Reader", which was published by the American Phonetic Publishing Company, in 1855 (Downing, 1965a).

One of the most interesting alphabets devised was that of Alexander Melville Bell, father of Alexander Graham Bell. Bell was, by his own definition, a professor of vocal physiology. In his book, Visible Speech (Bell, 1867), he says of his project:

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[3] This information is given in a pamphlet called "Biographical Details of Sir James Pitman, K.B.E., M.A., M.P., with a note on i.t.a.", published by Wood, Razelaar, & Wilkes, Ltd., England. "n.d."

> It would really be a matter of but little difficulty to reconstruct our alphabet, and furnish it with invariable marks for every appreciable variety of vocal and articulate sound.... The practicality of extending this mode of representation to all possible sounds was conceived and ultimately became a persistent idea. But the necessary pre-requisite for carrying out the idea was to obtain a knowledge of the exact relations of sounds, and the conditions to which they owe their differences.... In this way a system of notation might be constructed by which all the sounds of any dialect might be represented intelligibly to readers of whatever country or tongue. A table of all recognized elements of speech on this natural principle of arrangement might be one step toward the realization of that indefinite philological speculation,- a universal language. (p. 14)

The resulting alphabet not only showed the manner and place of articulation of each sound, but also showed visibly the relationships of sounds to each other. He asked the British government to finance the printing of the book, but this request was not granted, and he published it on his own. He taught his sons to use the symbols, and he and his sons gave demonstrations of their use. He felt that his alphabet was simple to learn and to use. He said:

> The correlation of the Sounds and the Symbols rendered the latter SELF-INTERPRETING to those who possessed the key to the symbolism and so converted the UNIVERSAL ALPHABET, which had been the object of the designer, into a real VISIBLE SPEECH; the latter constituting, in fact, a new science,- adapted for the use of all mankind. (p. 19)

He felt that his alphabet had many uses, including the teaching of illiterates, the teaching of the blind to read, teaching of foreign languages, standardization of native pronunciation, telegraphic communication, the study,

comparison, and preservation of fast-disappearing dialects, the speedy diffusion of the language of a mother tongue to its colonies, and application for a universal language. He felt that his Visible Speech had particular application for use with the deaf and dumb, because they could be directed visibly and kinesthetically. He also felt that it could be used for the "prevention and removal of defects and impediments of speech", because in dealing with these, "knowledge" of the mechanisms of speech is "power" of correction. He said, "Such habits should, now that these mechanisms have been plainly revealed, be easily and certainly prevented." (p. 20) Although Bell's plans for the use of Visible Speech were not fully realized, it was used extensively by him and by Alexander Graham Bell for the teaching of the deaf. According to Wise (1957a), it is still used in some schools for the deaf.

Henry Sweet was a British phonetician and a student of Bell. He modified Visible Speech into what he called the Organic or Revised Visible Speech (Kantner and West, 1960). He realized that even this revision was too complicated. He then introduced his Romic system. The basis for this alphabet was the Latin or Roman alphabet. It was initially divided into Broad Romic and Narrow Romic. In 1886, the International Phonetic Association was founded, and its alphabet was based on Sweet's Broad Romic (Wise, 1957a).

According to Hughes (1962), the aim of the IPA alphabet was to provide one sign for each of the speech sounds

that can be produced by the human vocal apparatus. He says, "Naturally, the number of such sounds varies with the sensitivity and discrimination power of the detecting instrument, up to infinity." (p. 142)

Belardi (1964) points out that the IPA system, as with every other proposed system, can represent, with its signs, only a part of the articulatory possibilities. As a matter of interest, according to Hall (1950), it was said that Daniel Jones could hear 120 different vowel sounds in English. Thus the task for which The International Phonetic Alphabet was designed was not an easy one. It is currently used extensively by linguists, phoneticians, speech pathologists, and audiologists.

Kantner and West (1960) point out that the IPA (which was devised before phonemic theory was formulated) is really a phonemic alphabet; that is, it provides a symbol for each phoneme. They say that in broad IPA transcription, we write in terms of phonemes, and in narrow transcription, we attempt to record some of the variants within the phoneme.

In 1866 Leigh introduced a special transitional alphabet into the schools of St. Louis, where it was used for twenty years. Dr. Leigh had over seventy letters in his alphabet. The school superintendent claimed that spelling was more correct and speech was clearer (Downing, 1962). Also in the 1860's, efforts were made to teach children reading by a simplified spelling system in Waltham, Massachusetts (Larrick, 1965). In Britain, a method

devised by Jackson, with an alphabet similar to IPA, was used at Miss McCullum's school in Scotland. Downing (1962) says, "She seems to have included a good deal of speech training in her method...." (p. 6)

In 1877 the American Philological Association developed their Scientific Alphabet. This was revised in 1890 and retitled, "Standard Phonetic Alphabet". In 1911, there was further revision by the National Education Association. There were also further revisions in 1922 and in 1928 by the Simplified Spelling Board and the Spelling Reform Association. The NEA revision was used for Funk and Wagnall's Standard Dictionary (Pei, 1958).

In the early 1900's the Simplified Spelling Society of England published "A Ferst Reeder in Symplifyed Speling", "A Sekond Reeder", and "Jinglz and Storiz", which were tried out in English Infant Schools (Larrick, 1965). Between 1915 and 1924, fifteen British schools experimented with a special "simple phonetic orthography", and the results were published by the Simplified Spelling Society in 1924 (Downing, 1962). Bradley (1919), the Senior Editor of the Oxford English Dictionary, did not advocate radical spelling reform, but he did feel strongly that procedures could be adopted for teaching young children. He said:

> There is no doubt that those unphonetic features of our spelling, which have their practical value for the educated adult, do add enormously to the difficulty of learning to read and write. The waste of time in education caused by the want of consistent relationship between the written and spoken

> word is a serious evil, which urgently calls for a remedy. (p. 32)

Bridges, in his book, English Pronunciation (1913), urged that phonetic spelling be "...more conservative and less conversational than that which our phoneticians actually favor." (p. 5) He developed a system of phonetic writing which he felt preserved our alphabet as much as possible. In his phonetic alphabet, he sometimes allowed more than one symbol for the same sound, but never the same symbol for several different sounds, as in our present alphabet. His alphabet had fifty-eight symbols. He recommended disregarding capital letters.

Godfrey Dewey wrote Relativ Frequency of English Sounds (1923) which was printed in his system of simplified spelling. Some of his changes were f for ph (alfabet), i for y in a word such as syllable, substitution of t for ed endings with that sound (markt), elimination of double consonants, and elimination of silent letters. Dewey called his alphabet "The Fonetic Key Alfabet", which was used in the publications of the Simplified Spelling Board.

George Bernard Shaw was vitally concerned about problems of English spelling. Shaw's will made provisions for financing the design of a new British one-sound-one-letter alphabet. Sir James Pitman was named in Shaw's will to help carry out his wishes.[4] Pitman (1964) said of him:

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[4] A competition was held for this new alphabet. The Shaw Edition of Androcles and the Lion (Penguin Books, 1962) is printed in the symbols that won the competition.

> Shaw was aware that no one already skilled in reading and writing in our traditional orthography would tolerate both a major disturbance of his visual habituations and a visual destruction of all his hardly acquired skills in automized writing.... What was needed was not a destruction, or even disturbance, of the old by the new, but the development of a new reading and writing medium, the new to be continued as heretofore side by side with a continuance of the old. (p. 18)

According to Tauber (1958), Shaw believed that a rational spelling reform would help the English to teach their children how to speak better. Rossiter (1953) said of Shaw and his project of devising a new and improved alphabet,

> ...a hopeless venture, it seems to me. It is true you cannot put spoken Englishes down till we have a 100 per cent detailed, scientific, phonetic recording system. But few could use it without highly specialized training. (p. 75)

Another spelling reformer of the twentieth century was Colonel R. McCormick of the Chicago Tribune. The Chicago Tribune for several years used such simplified spellings as frate, thru, altho, donut, and nite (Pei, 1958).

Some of the more current attempts at spelling reform or simplification include Helen Bonema's "dikshenerikee", a phonetic alphabet which is being used in Colorado (Downing, 1962), and a system by Bloomfield and Barnhardt which includes a special primary-grade reading text that uses only consistently spelled words (Sebasta, 1964). A "Colour-Story Method" is currently being used in the South of England (Jones, 1965). This system uses individual letters, digraphs, and three colors and three shapes for background.

Non-conforming letters are printed in black.[5] Taylor proposed, not a new alphabet, but new names. He says, "Instead of a, b, c, d, I started with consonants and gave them new names. b was 'bi-ib', so that if you had a word like 'bib', it was very easy to spell." (Pitman, 1961)

Seegay (1962) proposed a complete renunciation of traditional orthography, with the substitution of a strictly phonetic alphabet. He said that we would spell and pronounce and read and write every word exactly as it was properly spoken- the true and accurate written mirror image of the orally spoken form.

Some reformers have advocated a diacritical marking system, the advantage being that spellings do not have to be altered (Fry, 1966). An alphabet that entails considerable alteration is Unifon, introduced by Malone in 1957. His interest in computers, dataphone transmission, and inter-lingual communication influenced his construction of the Unifon symbols. Each of its symbols is designed to touch the four sides of a module for machine recording and reading. Unifon research is sponsored by the Foundation for a Consistent and Compatible Alphabet, of which Malone is executive secretary (Larrick, 1965). The following advantages of Unifon are listed by Malone (1962): it has one

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[5] Here is an example for the letter c: it is green when it occurs as part of the digraph ch as in chair, blue if it has the sound of k as in echo, red if it has the sound of s as in city, and blue and triangular background it it has the sound of sh as in the word machine.

letter for each sound, as well as one sound for each letter,[6] is designed for machine reading as well as human reading, has built-in mnemonic devises (for example, all long vowels have a horizontal line), and has no double letters. It is designed for permanent adoption, rather than as a transitional reading alphabet.

Many objections have been raised to spelling reform. In a country where most of the adult population is literate, a successful spelling reform would necessitate a re-learning process for the new system. The voluminous body of printed matter would become obsolete. Foreign words that currently bear some resemblance to English words would become unrecognizable. The dictionary would no longer be able to list root words together whose initial syllables change in sound but not in present spelling- such as nation and national. Malone (1962) points out that for awhile everyone would have to know two systems for writing and reading during the transitional period. He also points out that the size of the publishing industry, and the cost of changing type and type-setting machinery provide serious restraints on change. Another obstacle of spelling reform for adults, according to Dewey (1968), is "...an almost total lack of awareness of the number and nature of the sounds of their own language." (p. 28)

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[6]Thus Unifon has forty characters, as compared to forty-four in i.t.a. The reasons for the larger number in i.t.a. are discussed in the next chapter.

Those who advocate spelling reform feel that the advantages would far outweigh any possible disadvantages. Tauber (1958), in the concluding chapter of his thesis on spelling reform,[7] suggested conferences of phoneticians, teachers of English and speech, psychologists, reading experts, educators, publishers, lexicographers, and linguists from English-speaking countries, to consider the advisability of a modification of the orthography of English. He felt that simplified spelling should be used and tried experimentally in reading projects, in speech correction work, and for foreign students.

Carroll (1963) said:

> Covertly, some linguists (but not all) are enthusiastic advocates of spelling reform. Bloomfield, Hall, and other linguistic scientists have stated their conviction that instruction in reading can be improved only if it is founded on a correct analysis of the relation between speech sounds and orthography. (p. 146)

The Augmented Roman Alphabet

Sir James Pitman, born in 1901, has been described as a member of parliament, publisher, an engineer of language. He said that he was greatly influenced by the work of his grandfather, Isaac Pitman (Pitman, 1968). As a member of the Simplified Spelling Society, he had long been interested in spelling reform. When he began to think of the possibilities of a transitional alphabet, rather than alphabet

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[7] Tauber's doctoral thesis Spelling Reform in the United States is soon to be published by Philosophical Library, N.Y.

reform, the basis for an initial teaching alphabet began to take form. The actual design of the alphabet was a slow evolution, according to Pitman. It was first called The Augmented Roman Alphabet, to indicate that additional characters had been added to the standard English alphabet. The Augmented Roman Alphabet owed much to the work of Ellis' and Isaac Pitman's Phonotypy, and Nue Spelling, developed by the Simplified Spelling Society.

In 1952 a bill was proposed in the House of Commons by Mont Follick and seconded by Sir James Pitman which asked the government:

> ...to make provision for the determination of a suitable system of simplified spelling and for the investigation of the improvements in the reading ability of children likely to result from the introduction of this system and to facilitate the subsequent introduction of the system in certain schools. (Downing, 1966c, p. 27)

The bill did not become law, but it created much interest. In May, 1953, consent was obtained from the minister of education for experiments in this direction. In May, 1959, an article by Pitman appealed for teachers of reading to volunteer for the research. In June, 1960, a press conference was held at the University of London, at which time the reasons for the research were announced, and a call for support from the education authorities was made. This appeal met with widespread response.

Research was begun on the Augmented Roman Alphabet in England in 1961. In 1963, a decision to change its name

was made. The new name, believed to express more clearly the nature and purpose of the alphabet, was The Initial Teaching Alphabet--i.t.a.

TABLE I

ſhe i.t.a. alfabet

a	b	c	d	e	f
cap	bed	cat	dog	let	for
g	h	i	j	k	l
go	hat	milk	jump	key	like
m	n	o	p	r	s
man	nest	box	pen	red	see
t	u	v	w	y	z
ten	up	vase	win	yes	zoo
wh	ch	th	ſh	ſh	
when	child	three	the	ship	
æ	ee	œ	ie	ue	
ape	tree	toe	tie	due	
a	ɔ	ɾ	au	ou	
father	close	girl	cause	cloud	
oi	ʒ	ŋg	ω	ωω	
oil	vision	ring	book	moon	

CHAPTER II

THE INITIAL TEACHING ALPHABET

Early Beginnings, and Spread of i.t.a.

The Initial Teaching Alphabet project, launched in Great Britain in 1961, was a joint enterprise of the University of London Institute of Education and the National Foundation for Educational Research in England and Wales. In addition to Sir James Pitman, the committee who supervised the project was composed of professors, psychologists, and phonetician D. B. Fry of University College, London. John Downing served as Research Director.

In reference to the purpose of the alphabet, Sir James Pitman said, in a paper presented in 1961:

> This paper is about a particular augmentation of our familiar lower-case roman alphabet, and about a particular research which is now proceeding, with the object of finding out whether greater success in learning to read will be achieved by children in their earliest attempts if this agumented roman medium were used... and if the normal medium...were withheld until they had developed skill in reading in Augmented Roman, and established confidence. (p. 1)

More recently (Pitman, 1968), he said:

> There have been many honourable precedents for starting from the sounds of speech and seeking to represent them visually, and it is hard to recognize that the purpose of any initial teaching alphabet is the very

> opposite of this: the aim is to construct not a writing system but a reading system which is something altogether different. (p.53)

The aim in brief, then, of the Initial Teaching Alphabet is to simplify the task of the young child as he learns to translate graphemes into sounds. Pitman wished to prevent young children from experiencing difficulty and failure in the beginning stages of learning to read. He did this by developing an alphabet that he felt was simpler and more reliable as to spelling than the traditional alphabet.

Both Sir James and J.Downing, the Research Director, emphasize that i.t.a.[1] is not a method of reading instruction, but an alphabet. It can be used with any method of teaching. It permits use of many existing methods, and may encourage the development of new ones. Perhaps one reason for its reported success is that it can be adapted to individual methods of individual teachers.

In the United States, i.t.a. was first tried in 1963 by Anita Metzger, in a New Jersey private school (Downing, 1966a). The first large-scale use of i.t.a. in this country took place in Pennsylvania. It was introduced there by Mr. Philip Hilaire, who was reading consultant to the U.S. Air Force Dependents' Schools in England. He began sending letters concerning it back to his home-town, Bethlehem, Pa.

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[1] The Initial Teaching Alphabet Foundation uses the abbreviation i.t.a. Initial Teaching Alphabet Publications, Inc. writes it i/t/a. Traditional orthography is abbreviated as T.O.

This small beginning eventually led to the first research project in this country, in the Bethlehem schools. The research plan was sponsored by Lehigh University. The project was directed by Dr. Albert Mazurkiewicz of the Lehigh Dept. of Education. Another early research project was sponsored by the Educational Research Council of Greater Cleveland.

According to reports comparing the Greater Cleveland and Bethlehem studies, the Bethlehem population included families of many different backgrounds, rich and poor, white and negro, farmers, business executives, and factory workers. The Greater Cleveland population, on the other hand, included children mainly from a one-class, suburban community. Yet both studies reported significant positive results with i.t.a. In England, there are currently about 2200 schools using i.t.a. In the United States, it is in use in every state except South Dakota (Riemer, 1969).

Basic Characteristics of i.t.a.

The i.t.a. keeps all the traditional letters of the alphabet except two- q and x. It then adds twenty new symbols, bringing the total number that a child must learn to forty-four. The original Augmented Roman Alphabet had forty-three characters, but the number was increased to forty-four by the addition of ʃ . This symbol was added to represent the sound heard in bird, word, burn, and herd. Riemer (1969) categorizes the characters as follows: twenty-four traditional symbols, plus an extra a, written ɑ ,

fourteen combinations of traditional letters into new forms, such as ʃh, œ, and ɛɛ, and five that are peculiar to i.t.a., ʒ, ω, ɷ, ʃ, ɾ.

The symbols are referred to as characters. There is, incidentally, no copyright on the i.t.a. characters. The free right to use i.t.a. was given to everyone by Pitman, on the condition that the characters as designed by him, and the spellings as chosen should be used unvaried and with their sound values unchanged. The Initial Teaching Alphabet Foundation in the United States has agreed to certify material conforming to the characters and rules adopted by Pitman.

Although there may be more than one symbol for a particular sound (for example, c and k both have the same sound), the reverse is never true. Therefore, there is a one-to-one relationship between each character and its sound, so that there is visual-auditory consistency. The fact that it is an alphabet that has visual similarity to traditional orthography makes later transfer to the traditional alphabet an easier task. This is one advantage of i.t.a. over a completely new alphabet, such as the Shaw alphabet, or Unifon. It is the opinion of the people working with i.t.a. that this similarity makes the use of it less of a problem than would be encountered with use of the symbols of the International Phonetic Alphabet. It is important to remember that a major difference between the i.t.a. and the I.P.A. is that the use of phonetic symbols would represent

an encoding system, an attempt to reproduce precise sounds, whereas i.t.a. represents a decoding system, an attempt to provide clues to the sound system already mastered.[2]

One criticism of i.t.a. is that it presents more written symbols (44 as compared to 26) for the child to learn. In commenting on this, Pitman (1966b) says:

> It is a mistake to suppose that there are more characters to be learned in an alphabet designed for easier learning than there are in our traditional orthography (T.O.). Our traditional alphabet has not 26 but 66 characters... (p. 9)

He goes on to illustrate some of the 66, such as A, a, ɑ, F, f, 𝓕, 𝒻, or L, l, ℒ and 𝓁.

Each character has a name (see Table 2). But according to the i/t/a Handbook for Writing and Spelling (Mazurkiewicz and Tanyzer, 1965a), the character names are not usually taught, because the child often becomes confused in analyzing and synthesizing words when he has a choice between a character name and a character sound. Therefore, only the sound which is to be associated with a character is taught. It is interesting to compare this philosophy to one found in a teacher's guide to phonics:[3]

> ...It has been found that in speaking of the letters, it is better to call them by their names rather than their sounds as used to be done in many schools. This is

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[2] The i.t.a. foundation report (1966).

[3] Phonics and The ABC's (1961).

> recommended because the sounds in the English language are spelled in many different ways, and each letter may represent a wide variety of sounds. For example, the letter a has at least 22 different sounds. (p.3)

A related statement from the same source is that attention should also be given to the alphabet approximately in the fourth grade, where the use of the dictionary is first introduced. It is the opinion of some i.t.a. authorities such as Tanyzer,[4] that the proper time to teach the alphabet is not in the first grade, but at a later time when such alphabetizing skills are needed.

In discussing the design of the characters, Wolfgram (1966) says that where deviations were necessary, symbols were designed in close parallel to their traditional counterparts, for ease in transfer. An example given is the comparison of ee and ɛɛ. Some of the special symbols were designed according to psychological principles of reading to foster early transition, according to Wolfgram. The example given is the principle of closure, indicating that the mind tends to close circle gaps, so that the i.t.a. symbols, ω and ɷ resemble double o, which most often represents these sounds. i.t.a. retains double consonants, for the sake of easier transition, even though the use of the second has no phonemic value.

i.t.a. consists entirely of lower-case letters. It

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[4] i.t.a. Workshop, Hofstra University, 1966

was felt that capital letters constitute an additional learning problem that is unnecessary. Downing (1965a) points out that in many instances, the lower-case and upper case forms are quite different in appearance, which adds to the burden of learning them in T.O. According to McBride (1965), over one-half the traditional capital letters are distinctly different in shape from their smaller-case counterparts. He cites, for example, D and d.

An attempt was made to introduce changes in letters more at the bottom of the letter than at the top. In reading a row of words, the eye skims over the "sky-line", as can be seen by covering the bottom half of a sentence and trying to read it, and then covering the top, and trying to read that. The first is an easier task. In i.t.a., only a few augmentations intrude on this skyline. As a child begins to read faster, he begins to plane over this skyline. At the time of transition, when some T.O. letters are substituted, some children do not even notice the difference.

In i.t.a. each symbol has only one primary sound value, according to Downing (1966a), and it is believed that this will permit a child to discover rules which link the printed symbol to his past experience of the spoken language. He says that the fact that there are still alternative ways of writing some of the phonemes of English is one of the consequences of the compromise between a need for simplification, and the need for ease of transfer later on.

i.t.a. is not a phonetic alphabet, because it was not designed to represent precisely the sounds of spoken English (Downing, 1965b). It does not reflect regional differences, because, like the traditional orthography, it is a standardized system. Downing points out that the characters of i.t.a., from the point of view of phonemics, have secondary, as well as primary values. For example, a is used to represent the phoneme common to cat, hat, etc. But it has a secondary use in such words as sofa (sœfa) and about (abœut). He says:

> The unstressed neutral vowel has so many alternative symbols in T.O. that a vast number of changes would be required at the point of transfer to T.O. if any one of the T.O. spellings had been chosen to represent this sound exclusively. In i.t.a. the aim is to retain the minimal cue configurations which are the basis of fluent reading in T.O. In this way the transfer from reading in i.t.a. to reading in T.O. has been made easier. Most of the other secondary values of i.t.a. could be made more regular in its representation of English phonemes, but this might be at the sacrifice of ease of transfer. (p.499)

Downing emphasized that i.t.a. is transitional, and therefore not a spelling reform. He says that it was

> ...deliberately designed as a compromise between the aim of simplicity and regularity for the beginner, and the aim to ease transfer once fluency in i.t.a. reading and writing has been achieved. (p. 500)

Dewey (1968 sums up i.t.a.'s qualities as including:

> (1) skillfully selected concessions from strictly phonemic writing to achieve maximum

> compatibility with T.O. in the interest of minimum effort of transition on the part of the young child learning to read, (2) restriction to lower case letters, (3) design of additional characters to retain or suggest the more familiar T.O. spellings of certain phonemes, and (4) preservation of the "top coastline" of T.O. (p. 32)

Learning the Characters

Children using i.t.a. do not seem to experience any difficulty in learning how to write the characters. The characters are introduced in the reading program on the basis of sound frequency occurrence, rather than on the basis of spelling regularity, as in most traditional orthography reading programs. Each character is introduced with a key word picture, and the key word pictures may be referred to whenever necessary in the child's alphabet book. The Early-to-Read Teacher's Manual (Mazurkiewicz and Tanyzer, 1966b) lists and discusses basic steps for teaching the characters.

1. Auditory Perception This includes listening, sound identification, sound discrimination, and sound location within a word. The manual states that "The consistent relationship between character and sound ... provides a psychologically sound basis for developing the visual and auditory skills...." (p. ix)
2. Auditory-Visual Association Practice in writing the characters serves to strengthen the child's

recognition and retention of the characters. The child progresses through graded steps, beginning with tracing, following a broken-line pattern, completing broken-line parts, and finally writing a character independently. The child learns to associate a character's graphic pattern with the sound it represents.

3. Reinforcement and Contextual Application The child is provided with practice in applying the new character in word and sentence context, so that he develops the ability to synthesize the sound elements of a word and pronounce it as a whole. He is taught to use his code deciphering knowledge.

i.t.a. Materials

Materials written in i.t.a. have become increasingly available. Approximately eighty commercial organizations are currently involved in the production, sale, and distribution of i.t.a. materials in America, Great Britain, and Canada, There are over 700 titles available in i.t.a. The standard teaching materials used in England (primarily the Downing Readers) and in America (primarily the Early-to-Read Series and the Greater Cleveland Reading Program) are somewhat different in approach and organization of material. It should be noted also that children in Great Britain generally begin the i.t.a. reading program at an earlier age than in the United States.

General Comparisons of i.t.a. and T.O.

Downing (1963) points out that one feature of the new environment which a child meets on starting to school is the demand made upon him to interpret the symbols in printed books in relation to his life-long past experience of the spoken language of his culture.

In learning to read in any language, the child faces what is essentially a decoding problem. But in English, the code is an unreliable one. Mazurkiewicz and others (1965) say that almost nothing has been written that examines the effect of spelling of the English language on a child's learning. They say:

> Depending on which source is accepted as authoritative... the English language has thirty-five to forty-seven phonemes or sounds. The American College Dictionary shows that the forty-four phonemes of English are represented by 251 spellings. This makes English about eleven per cent phonetic. When we add the number of different patterns (upper and lower case) for letters with which the reader is confronted, we note that he may meet with as many as 2000 different units of information which he must assimilate before he can command the printed page. (p. 347)

The several thousand ways of spelling English sounds place a heavy burden upon the beginning reader. In discussing i.t.a. and other reading systems, Riemer (1969) makes an interesting comparison:

> Both i.t.a. and the basal readers recognize that the mysteries of English reading are secured by a badly warped lock. Each attack that lock in a different way. Dick and Jane and Nat and his rat bend their keys to fit the lock's warp; i.t.a. temporarily corrects the lock itself. (p. 83)

It is not only upper and lower case letters, mentioned earlier, that present different visual patterns. Script letters often add yet another visual pattern. There can be, for example, ten different visual patterns for one word: BAG, bag, Bag, Bag, bag, Bag, bag, bag, bag, and Bag.[5]

There are three major sources of irregularity in English. First, there are a confusing number of spellings for one particular sound, as [aɪ] in I, height, eye, child, file, lie, sign, high, island, guide, buy, by, dye, style, aisle, and choir.

Second, there are a variety of sounds for a particular letter, because we do not have sufficient letters in English to represent each one. For example, the letter a may represent various sounds, as in all, any, at, gate, father, and others.

Third, some letters are used in combination to represent a single sound, for example, t and h for [θ], t and h for [ð] c and h for [tʃ], and s and h for [ʃ]. In such combinations, the sound represents an entirely different sound from the sounds of either of its separate letters, so that no clues for decoding ch or sh or th are provided by the letters.

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[5] an introduction to the initial teaching alfabet, the i.t.a. foundation, London.

Pitman (1961) says that T.O. is full of "disrelationships", of two kinds: (1) those that imply a relationship when there is none, as in the words bone, done, gone, and one, and (2) those that imply no relationship, when there is one, such as many, and penny. Thus T.O. fails a child auditorially. For children who become poor readers, the damage may be caused by springing all these difficulties on them when they are too inexperienced to cope with them (Downing, 1961). i.t.a. is based upon the idea of beginning with an easy system and postponing the difficulties until the child has grasped the general idea of getting meaning out of print. This gives a child the ground-work, as well as the confidence, to tackle later problems.

Downing, in two recent articles (1969b and 1969c), writes that i.t.a. seems to clarify the structure of English in several major ways:

1. It increases the frequency of experience of regularity of grapheme-phoneme correspondences in a wider variety of contexts. For example, the phoneme common to the words eye, I, and aye, is written ie regularly in i.t.a. This therefore greatly reduces the number of alternative representations for each phoneme. In the sentence, "I like my pie," T.O conceals the phoneme common to each word because it is written differently each time. In i t.a. - ie liek mie pie - the common phoneme is always written in just one

way, so that this structural element stands out clearly in visual perception as well as in auditory perception.

2. i.t.a. spellings more frequently signal correctly the number of phonemes in a word. Downing gives as an example, the word thought.

T.O.	t	h	o	u	g	h	t
character number	1	2	3	4	5	6	7
phoneme number	1			2			3

i.t.a.	th	aw	t
character number	1	2	3
phoneme number	1	2	3

In T.O., the word contains seven letters, and there are no visual clues to help the child find the number of phonemes. In i.t.a., there are three characters, and three phonemes.

3. i.t.a. spellings more generally indicate the temporal order of phonemes (for example, contrast T.O.'s extreme with i.t.a.'s ekstreem .

4. i.t.a. generally removes T.O.'s false clues to structure. For example, the letter o in the sentence "Some women do go on" represents five different phonemes. In i.t.a. each is signalled as being different: sum wimen dœ gœ on.

In general, then, there is a temporal, spatial relationship, auditorially and visually, that is clearly indicated in i.t.a. There appears to be improved perception of the structural components in spoken and written language.

Downing, in an article on perception of linguistic structure in reading (1969c) says:

> The phonemic units and structure of the spoken language and the graphemic units and structure of the written language and the relationships between the spoken and written forms are of fundamental importance in learning to read in a language with an alphabetic writing system. (p. 269)

He also comments, in the same article:

> The theory is proposed that i.t.a.'s clarification of linguistic structure facilitates perception of phonemes, spoken words, graphemes, and written words... and that this is an important factor in the superior achievements of i.t.a. taught pupils. (p. 267)

Directionality

In T.O., we read words from left to right, but within many words, the letters are not read from left to right in the early decoding stages of learning (Downing, 1965a). For example, in the word made, the initial sound is signalled by the first letter on the left, but the second sound is signalled by the second and fourth letters, and the child must reverse, from right to left, to read the final sound, which is signalled by the next to last letter, rather than the last letter, which is silent. In i.t.a. there is always left-right consistency, with the one exception of the character ſ , which affects the vowel preceding it. (See discussion of this in Chapter V.)

Laurita (1968) comments on i.t.a.'s capacity to assist in establishing directionality with regard to language symbols:

> The fact that this new medium literally forces the learner to respond in a multi-sensory manner to the left-right flow of language almost always causes improved directional skill. The necessity on the part of the learner to respond visually and aurally, letter-by-letter, to the individual elements of each configuration, and the development of the capacity to encode...by printing the symbols in a consistent left-right manner, provides strong motivation for improved understanding of the need for a consistently left-right orientation in dealing with language. (p. 232)

Reading and Problem Solving

Levi (1965) says, of some children with learning problems, that they cannot organize what they have apprehended; they cannot fit selected bits of reality into a plan. It would appear that many children have beginning reading difficulties for similar reasons. Downing (1968a) expressed the opinion that developing insight into the structure of language is a thinking process. In one of his books (Downing, 1965a) he said:

> In learning to read with the traditional orthography of English, the child's rational approach to solving the problems of breaking the print-code is unrewarded and discouraged, because the ambiguity of the code too often leads to failure. (p. 37)

In another source (Downing, 1964b), he says that the child who learns to read in i.t.a. can consistently apply reason and logic to this process. This would not be true in T.O., according to him, because there are far too many exceptions to the rules. The regularity of i.t.a. provides a child with word-building problems which can be logically

solved. Thus a child's rational approach to such problem-solving is rewarded and reinforced. According to Downing (1966a):

> It seems possible that these contrasting, early and oft-repeated experiences in problem solving may establish different patterns of mental reaction to problem solving in general, and that differences in the development of ability in problem solving...may follow. (p. 41)

Downing (1969e) recently wrote:

> ...The most comprehensive and thorough review of research on children's failure in reading ever to be undertaken arrived at the conclusion that it was a breakdown in the thinking processes in learning to read which consistently appeared as the real problem in study after study. Vernon (1957), in her classic review, Backwardness in Reading, concluded: "Thus the fundamental and basic characteristic of reading disability appears to be cognitive confusion and lack of system." (p. 217)

Dewey (1968) comments that there is evidence that gains from i.t.a. go beyond improved facility in reading and writing.

> By contrast with the frustrations of T.O., in which the child must incessantly disregard analogy and reject the results of observation, the success-motivated "learning by discovery" in applying the rational i.t.a. code, tends to influence the child's whole attitude toward schooling. (p. 32)

Creative Writing

According to Vigotsky (1962), when a child's thinking has matured to the point where he can grasp the connection between sign and sound- then he is ready for writing. Downing (1968a) says that a young child has little motivation for writing because he lacks an understanding of the

purpose of writing. Most children in our public schools do not really begin to write creatively until second grade, because such writing, for most of them, is even more difficult for them than reading.

Brown (1958) asks us to imagine, for a moment, that we are first grade teachers; we must teach children, who are likely to have approximately 10,000 words in their speaking and recognition vocabularies, how to read, spell, and write. If our writing system were consistently phonetic, we could simply teach them the letters of the alphabet corresponding to each sound, give them practice in analyzing words into sound units, and they would have reading vocabularies as large as their speaking vocabularies. In fact, says Brown, in English this is not so easy.

It is interesting to compare writing skills in English with writing skills in another language. Riemer (1968) did just that. In 1964 he wrote to elementary schools in Italy asking for samples of written compositions. From Brescia and Milan, he gathered many samples. He concludes that Italian youngsters "write from their ears", whereas in English T.O., writing is primarily through the eye-to the eye. Riemer feels that i.t.a., like Italian, enables children to write from their ears. There is a good <u>fit</u> between what a child sees with his eyes, and what he hears, and what he says. (1968) Thus, following up Brown's theoretical first grade children, if such first grade children can <u>speak</u> several thousand different words, in

i.t.a. they can write several thousand words. (Some first graders made up a little verse that went something like, "Whatever we can read, whatever we can say, we know how to write in i.t.a.")

Loring (1968) feels that creative writing is the most exciting part of i.t.a. She says that it is important because it gives practice in manipulating language, encourages self-expression, enables the teacher to diagnose weaknesses, and enables the teacher to better understand pupils. Mazurkiewicz (1964) feels that reading, which is decoding, and writing, which is encoding, should be taught simultaneously. Teacher reports indicate that children in i.t.a. write more, with a more advanced vocabulary, with language more like the child's spoken language, and with greater independence.[6] Riemer (1969) says that i.t.a. writers use sentences that run with their spoken inflections and rhythms. Children tend to write more for their own enjoyment, than T.O. writers do.

In one study, i.t.a. pupils wrote fifty per cent more words than T.O. pupils in a week's work selected at random. The range of written vocabulary was forty-five per cent greater in the i.t.a. group (Downing, 1969b).

In another study, comparing type-token ratios in oral and written work, closer correlation was found in the

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[6] The i.t.a. Foundation Report (1966)

written and oral work of i.t.a. children than in non-i.t.a. children (Sandel, 1968).

Self Confidence

The i.t.a. has been called the "confidence alphabet", because of the security it appears to give children who use it. Downing commented in a recent talk (1969f) that the i.t.a. children showed a greater eagerness to try to read or spell an unfamiliar word. Block (1968) says:

> Subjective reports of classroom teachers concerning heightened enthusiasm toward school, toward reading and the development of generally more positive self-concepts are testimonials to the value of using i.t.a. (p.xi)

Hastings (1968) listed areas of general growth as including improved self-image, self-development through success, increased desire to learn, greater independence, sensitivity to language, love of reading, greater ability to write, release of emotions through creative writing, greater self-direction and self-discipline, and increased ability to deal with abstractions.

General Language Experiences

A reported advantage of i.t.a. is that it presents a total language experience which includes listening, speaking, reading, and writing. Downing (1965a) lists several indications of the experimental work. Reading attainments are significantly superior. Slower learners make better progress. Young beginners have a higher level of confidence,

and show greater enthusiasm and interest in books. Children make independent progress at an earlier age. Attitudes towards school activities are more positive.

Stewart (1968) says:

> The augmented alphabet not only inducted the child into the process of reading, but also gave him the freedom to use all the communication skills. What was provided for children was an integrated, functional experience in communication. The more children read, the better they wrote; the more they wrote, the better they thought; the more they thought, the better they talked; the more they talked, the better they read. (p. 399)

Laurita (1969) feels that with i.t.a., children can be trained in the areas of perception, association, discrimination, directionality, and memory. McCracken (1968) comments on vocabulary; in a study, he found that the i.t.a. experimental group was significantly better on a pronouncing vocabulary in isolation test, as well as the pronouncing vocabulary in context test, on the Standard Reading Inventory. These results showed at the end of the first grade year, as well as at the end of the second grade year. Hayes and Wuest (1968) believe that reading programs that teach heavily concentrated sound-symbol relationships in first grade appear to give children greater power in reading lists of words in both grades one and two. Downing (1965a) says,

> If i.t.a. results in an earlier access to the contents of books, this opens up at an earlier age a whole new source of linguistic experiences for the child which may produce an accelerated growth of his vocabulary. (p. 54)

Pitman (1968) says:

> I believe that for the future the great contribution of i.t.a. is going to be in high-lighting the importance of the language skill, in listening, speaking, reading, and writing, and in leading the way to teaching policies and techniques in which the deliberate teaching of language is the objective, and the media and mechanisms no more than the tools by which to achieve the objective. (p. 18)

Transition

One of the greatest concerns of people interested in, and involved with i.t.a. has been the process of transition from the i.t.a. alphabet to traditional orthography, which usually takes place late in the first year, or early in the second year. Sir James deliberately designed his alphabet so that children could transfer easily. For example, the transfer from fiſh to fish, or from tie to tie is a very small one. Transition actually is an on-going process, since about forty per cent of the words introduced are spelled exactly alike in i.t.a. and in T.O. About 30 per cent are almost alike, as fiſh or tie . Only twenty to thirty per cent are completely different, as T.O. once and i.t.a. wuns , in which three of the four characters are different.

The theory of transition has been expressed by some as a process of learn, unlearn, re-learn. Downing (1968a) says that this is inaccurate; they do not have to unlearn because what they have learned is that language is structured. This knowledge is not unlearned, but rather applied and expanded

at the time of transfer. By this time, the child will have developed clear concepts of the phonemes of English. Research studies, cited later in this chapter, have shown that for the majority of children learning to read in i.t.a., transfer to T.O. is no problem. Some of the early studies, however, seemed to indicate that gains made in i.t.a. were not apparent in later testing beyond second grade. It was felt that possibly curriculum materials were not available that would enable the child to capitalize on the i.t.a. early gains in general language abilities. To correct this, the Bethlehem project instituted curriculum changes in the second and third years to take advantage of the i.t.a. gains. The implications of this study are that, with such curriculum changes, the potency of i.t.a. can be detected into the fourth grade (Mazurkiewicz, 1968). Initial Teaching Alphabet Publications, Inc. has recently announced a new series called Growing With Language, a new language arts program for pupils who have graduated from i.t.a. into the traditional alphabet.

Spelling

To obtain the i.t.a. spelling of a word, children are taught that the sound of the word should be ascertained by imagining it, or by actually saying the word and listening to the sounds made. Spelling is not ordinarily corrected unless a misspelled word shows that a child is using a character incorrectly in terms of its sound value. Thus a

child has the freedom to write either cat or kat.

Serious questions were raised as to the effect of i.t.a. training on spelling at the time of transfer to T.O. However, the same factors that make transition easy have an effect on spelling, in terms of the identical spelling in i.t.a. and T.O. of many words, plus the almost identical forms of others. Other words, during transition and after the transition period, are taught according to standard spelling rules. The only possible way to learn the correct spelling of the remainder of English words is through memorization. If anything, i.t.a. may make spelling easier if the child has learned to look at and analyze words more carefully. Downing's (1969f) observation is that the spelling errors of i.t.a. children are different from the errors made by children who have not learned to read with i.t.a.; when i.t.a. children do make spelling errors, they tend to be logical ones, whereas in the other group the errors are not logical ones.

Research Reports- Reading in i.t.a.

An i.t.a. Bulletin states: "By now, it is clear that Pitman's Initial Teaching Alphabet is one of the most thoroughly researched educational innovations of our era."[7] Since it was first introduced in twenty-one schools in the British study which began in 1961, further experimental

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[7] i/t/a Bulletin, Initial Teaching Alphabet Publications, 1966, p.1 .

research has been sponsored by the British government toward extending the use of i.t.a. in British schools. According to Block (1968) there are now approximately 1800 schools using it in Great Britain. Canada began using i.t.a. in 1965 on a relatively large scale. According to Downing (1968a) it is growing in Great Britain through conviction, and only one school has given it up. The research evidence made available by the London University Research unit reveals that there is considerable improvement in the oral and written communication skills of children exposed to i.t.a. Downing and Latham (1969d) report a follow-up of children in the first i.t.a. experiment. They report that follow-up tests indicate that the superiority in T.O. reading and T.O. spelling achieved by i.t.a. pupils by the end of the third year is maintained until at least the end of the fifth year. It also seems that the reported superiority of the i.t.a. pupils extends over a range of skills in the general use of English.

In another recent article (Downing, 1969a), it is reported that a new analysis of the data from the original British experiment has been focused on the relative incidence of <u>poor</u> and <u>very poor</u> readers in i.t.a. and T.O. classes. This shows that the i.t.a. reduces the proportion of poor achievers both in reading and in spelling.

Two of the most recent books that discuss British i.t.a. research studies in detail are Downing's Evaluating The Initial Teaching Alphabet(1967c), and Warburton and Southgate's An Independent Evaluation of i.t.a. (1969) .

There appears to be growth comparable to that seen in Great Britain in the United States, where i.t.a. is being used in some form in almost every state. In 1963 approximately 3,000 pupils in seven states were learning to read in i.t.a. As of 1967, the scope of studies involved 20,000 pupils (Block, 1968).

The i.t.a. Foundation was aware of almost forty different studies involving the use of experimental and control groups. Of these, approximately twenty-five have shown that the i.t.a.- taught children read significantly better than their T.O.- taught counterparts. Thirteen studies have shown no significant differences. According to Block, no study thus far has shown that there is a danger that i.t.a. children score significantly lower on any general measure of reading ability.

During the 1963-64 school year the Educational Research Council-Greater Cleveland Reading Program sponsored the largest kindergarten i.t.a. reading project in the United States. The positive results of the pilot study led to an extension of the project the following year, which included first graders. This large-scale research project

involved ten school districts, with approximately 1,000 children participating. The statistical assessment of the data revealed significantly higher achievement in the i.t.a. groups when tested in the medium in which they were instructed, and higher achievement, though not statistically significant, when tested in T.O. Research has been extended in further longitudinal studies in this program.

The Bethelehem Pennsylvania studies constitute a longitudinal evaluation of i.t.a. begun under the Fund for the Advancement of Education, and continued under a Title III government grant, for the demonstration of the use of i.t.a. in beginning reading and writing, and for the establishment and evaluation of a post-i.t.a. language arts curriculum. The conclusions concerning the 1965-66 population, as reported by Mazurkiewicz (1968) are that the use of i.t.a. produces early and effective reading, spelling, and writing skills and that this effect persists at least into the second year. The latest conclusions reported on this study in 1968 are that there is evidence that children who begin to read with i.t.a. have experienced no deleterious effects on such measures as spelling, comprehension, and vocabulary, that they continue to show a lack of inhibition in writing and expression into the fourth year, and that they make the transition in spelling in T.O. with no evidence of confusion in the four years subsequent to initial reading and writing instruction.

Two research studies have been sponsored by Hofstra

University, in Hempstead, New York. One was sponsored by the U.S. Office of Education. The second study, just completed, was a four-year research project sponsored by the New York State Education Department, which involved eleven school districts and more than 1,000 children in kindergarten and first grade. One of the objectives of the study was to explore the relative effectiveness of i.t.a. at these two grade levels. The report of the study (Tanyzer, Alpert, and Sandel, 1968) states that in a number of areas i.t.a. produced significantly better reading achievement. i.t.a. proved to be a superior medium of instruction regardless of the time at which instruction began; however, the researchers concluded that there was no distinct advantage to beginning reading instruction prior to first grade on a universal basis. The superiorities for the i.t.a. medium occurred generally in the area of decoding and were not consistently evident in the areas of comprehension, although in the few cases in which a significant difference was found in this area, the difference was in favor of the i.t.a. group.

i.t.a. in Other Areas

i.t.a. research, in areas other than reading instruction, has been on a relatively small scale, but its use in other areas is increasing. Mazurkiewicz (1965b) points out that since the Initial Teaching Alphabet provides a multisensory approach, it would appear that it can be utilized

for all kinds of children, as well as some adults.

One of its uses has been with special class children with problems of mental retardation. There have been reports of its successful use with educationally subnormal pupils in the United States, England, Scotland, and Ireland.

It has also been used with emotionally disturbed children.

Positive results with i.t.a. have been reported in remedial reading classes on both elementary and secondary levels.

It has been tried with disadvantaged children, as reported by Dunn and Bruininks (1968).

It has been used to teach adult illiterates and prison inmates how to read.[8]

It has been used as an aid in the teaching of bilingual children, and in the teaching of English as a second language. Studies have been reported of its use in Russia, Greece, Israel, Germany, and Yugoslavia. Because there is no indication in written words of the rhythm and stress of spoken language, Sir James Pitman devised a modified form of i.t.a. to include indications of syllabic stress.

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[8] Reports of such various uses are found in the books based on International i.t.a. conference proceedings for 1967, i.t.a. and the World of English, edited by Mazurkiewicz, and i.t.a. as a language arts medium, edited by Block (1968), as well as in i.t.a. Bulletins and Reports.

This is called "Speech i.t.a." or "World i.t.a." Changes in type are used to indicate differences in rhythm and stress, semibold to indicate primary stress, ordinary type normal stress, and smaller type, loss of stress. The "schwa" vowel is indicated by lowered position of the type, and what Pitman (1966a) calls the "schwi"[I] by a higher position of the type. A large-scale three-year study of World i.t.a., financed by the British Ministry of Overseas Development, has recently been completed in Nigeria. This project showed that i.t.a. produced superior results when compared to use of T.O. for instruction in English, with children whose native language is Yoruba (Downing, 1969b). Fatti (1967) reports on the use of World i.t.a. and Pronunciation Spelling for teaching Africans.

Criticisms of i.t.a.

Not all educators are convinced of the merits of i.t.a. Dr. Donald Durrell, a well-known reading specialist, made a prediction that i.t.a. would be forgotten in ten years. Other educators maintain a cautious attitude. Dr. William Gillooly, an education professor, felt that the promise of i.t.a. is a delusion. He is cited by McBroom (1967) as viewing the development of i.t.a. with alarm, because he feels that the optimistic belief that i.t.a. is a boon to young readers is not, in his opinion, justified. He notes that investigations supported by the U.S. Office of Education failed to produce evidence that i.t.a. was superior to

T.O. in teaching children to read and write.

Echoing Gillooly's criticisms is Dr. Arthur Gates, a prominent reading authority. He is quoted in the same article (McBroom, 1967) as saying that the expanded alphabet is artificial, cumbersome, and expensive, and often perplexing, and that it is unsuitable to many children who can learn to read without it.[9]

Marshall, in an article called "The Initial Teaching Alphabet- I Don't Agree" (1965) cites the Hawthorne Effect as playing a possible role in the success of i.t.a. This is a "novelty effect", based on the supposed progress due simply to being part of an experiment. Marshall cites difficulties associated with regional speech differences. Cutts (1964) also cites the Hawthorne Effect, which he feels can never be completely eliminated in education experiments, since teaching enthusiasm is an uncontrollable variable. He says:

> It may be that there are some children whose mental abilities or psychological sets make it difficult for them to discard one medium and master another....Even if ITA is approved and recommended as an instructional medium for general use in beginning reading, we will untimately need more refined experiments to determine the types of learners for whom it works best. We also will need to know the sort of program in which it functions best. (p.22)

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[9] The source of the quotation is given as a National Education Association pamphlet on reading.

In addition to those who express criticisms of i.t.a., there are others who are not specifically critical of it, but insist that other reading programs are just as advantageous. They point out that i.t.a. is not the only reading system that emphasizes decoding, and cite various linguistic, structural reading, programmed reading, language arts, and phonics-first basal programs.

Advantages claimed by proponents of i.t.a. that are also claimed for some of the above programs include the following:

The major emphasis is on decoding rather than on "deducing", as in "Look-say" methods.

The system provides a greater sense of order for the child through the kinds of material presented initially.

It is possible to introduce a larger vocabulary in decoding systems than in basal systems.

A sense of confidence is developed in the child through those systems in which regular spellings are presented in the first readers.

Spelling and reading, or reading, spelling, and writing in some systems, are integrated.

Children develop word analysis and blending skills from the very beginning of reading instruction.

There is increased emphasis upon listening and auditory discrimination skills.

Insight is developed concerning the relationships

between spoken and written language through the decoding processes.

In general, these programs place greater emphasis upon: (1) learning the code rather than deriving meaning from reading, (2) process rather than content, (3) spelling regularity rather than meaning frequency in terms of word selection, (4) use of structural clues rather than contextual clues in word recognition, and (5) the use of sounding and blending, or spelling, rather than visual analysis and substitutions , for word recognition.

Summary

The development of i.t.a. and its early history, its basic characteristics, its reported advantages, and some of its criticisms, current research reports on its use in early reading instruction, and some of its other uses, have been given. It would seem evident that the Initial Teaching Alphabet, though originally formulated as a transitional device for first grade reading instruction, may be adapted for other uses as well.

CHAPTER III

AUDITORY-VOCAL-VISUAL-GRAPHIC RELATIONSHIPS

Need for Research

A basic premise of this report, as stated in the introduction, is that an auditory-vocal-visual-graphic approach to speech therapy, since it provides multi-sensory avenues of stimulation, association, and reinforcement, should be an effective means of bringing about improvements in faulty articulation. This is a premise that has not been thoroughly researched with young primary-level school children. In an ASHA Monograph on Research Needs (1959), one suggestion made was for an exploration of the effect of visual stimuli on speech sound articulation. In relation to i.t.a., Downing (1969c) has suggested, as needed research, experiments to test a hypothesis that the clarification of linguistic structure by i.t.a. facilitates auditory and visual perception of phonemes, spoken words, graphemes, and written words as separate units.

Some General Comments

A review of the literature gives much interesting information concerning relationships of vision, writing, subvocalization, and speech.

Carroll (1963) says:

> The linguist would...wish to give the child every kind of assistance in developing word-perception skills; he would regard instruction in the nature of sound-symbol relationships as a highly effective kind of assistance. (p. 149)

Brown (1968) says that children should be given direct instruction in letter-to-sound correspondences. According to Pitman (1961),

> Your children...are auditorists no less than visualists. The very benefit of alphabetic writing was that it enabled these two aspects of human capacity to supplement each other in reading. (p. 10)

Riemer (1969) makes some pertinent observations:

> Language is primarily audible, not visible, and is meant for the ear more than for the eye.... It follows that since spellings represent the sounds of one's tongue they ought to call up voices....
>
> If our speech and spelling matched in a one-sound-one symbol relationship, we wouldn't have to depend on sight for correct spelling. The memory could be tracked from mouth to hand. We could write with our eyes closed as we felt the words in our mouth. We could spell by <u>feel</u>. (p. 84)

Duggins (1968) says, "Letters link a child's speech to reading...If the child is to read as well as he talks, the letters of the alphabet need to be linked to the muscles of his body in every way possible." (p. 22)

Lawrence Lawson, a consultant in opthalmology for the Institute for Language Disorders and Learning Disabilities Center in Illinois, emphasized the importance of inter-sensory integration at a recent conference of the Association for Children with Learning Disabilities (1967). He

felt that auditory-visual integration was particularly important.

Johnson and Myklebust (1965), in discussing dyslexia in childhood, say:

> Normally a child first learns auditory verbal language and at about the age of six years or when he enters school he learns to read by superimposing visual verbal symbols on his previously learned auditory language. Reading, therefore, is another step in the total language development process. (p. 260)

Kantner and West (1960), in discussing the use of phonetics, make some observations that might well apply to the use of i.t.a. They discuss the importance of establishing proper connections between the sound and other aspects of language in such a way as to fix the sound firmly in the associative process. They say that this may be accomplished by associating it with its phonetic symbol or its various orthographic representations. They feel that if phonetic training can be given along with reading, writing, and spelling, these disciplines can supplement each other.

Vision and Language

Dr. G. N. Getman has written extensively concerning vision and related areas. He says that vision is the process of deriving meaning out of what is seen, and is the skill of understanding and interpreting what is seen, together with information received through other senses such as touch, hearing, and even taste and smell.

Getman (1962) says:

> Again and again we are reminded that a child is a totality, and all performance skills are related and dependent upon each other.....
>
> Vision and language are closely related abilities- they support and extend each other.....
>
> A child calls up a "visual image" in his mind and matches new words against the image of those he already knows. A process of selection and elimination allows him to inspect and interpret the new one.....
>
> Visualization patterns are substitutes for action, speech and time.... (pp. 20-30)

Getman points out that what a child sees, and the meaning that he gets when he sees it, is much more than what his eyes look at. He feels that the complete process, when fully developed, allows seeing, feeling, speech, and hearing all to work interchangeably. He says, "Thus, any cue to any one of the four will bring additional interpretations via the other three." (p. 35)

Getman, in material written in 1965, makes some comments concerning the child's visualizations and their influence upon his speech-auditory development:

> ...He needs to learn that symbols upon the printed page can be transformed into primary, or vicarious visualizations, and further language participations.
>
> The Speech-Auditory Process then is the relationship that can be developed by the child between his primary experiences and his actual or visualized participations in all aspects of language.... The role and purpose of the visual system in achieving skills of communication have not been fully realized. There are so many comparisons and relationships that can be drawn between these two information receptors (the eyes and the ears) and it seems most important that these two systems be seen as corroborative systems.... When visualization

> skills provide the "carrier wave", words become the means by which a child can remember through time and space. (p. 70)

Graphic Performance and Language

According to Vigotsky (1962), a child, in learning to write, must disengage himself from the sensory aspect of speech, in the sense that he must replace words by images of words. He wrote:

> Writing requires deliberate analytical action on the part of the child. In speaking, he is hardly conscious of the sounds he pronounces and is quite unconscious of the mental operations he performs.
>
> In writing he must take cognizance of the sound structure of each word, dissect it, and reproduce it in alphabetical symbols, which he must have studied and memorized before. (p. 99)

Roman (1960) expresses the feeling that:

> Speech and writing are two human activities serving the same impulse- the conveyance of thought.... Yet these are but the interactive parts of a functioning unity in which symbolic capacity and "knowing" use of linguistic signs are associated with synchronic play of varied and complex muscle activities. It is this functional interrelationship that enables us to act interchangeably as speakers and listeners, readers, and writers, which achievement in itself suggests that all disorders of speech and writing should be examined in conjunction with one another. (p. 152)

Sub-vocalization

Vigotsky (1962) felt that the act of writing implies a translation from inner speech. Hall (1964) provides a related idea when he refers to sub-vocalization, or

non-externalized speech. He says:

> Speech goes on, not only when we are talking to others, but also when we are "thinking", either speaking under our breath (talking to ourselves) or not uttering any audible sound at all. It is often thought that the latter type of "internal speech" does not involve the use of language at all, but simply some kind of abstract "thought"--however, physiological research has shown that, even when we are "thinking" without uttering audible sound, nerve impulses are still starting out from our brains, as if we were going to speak. The nerve impulses are then inhibited on the level of the muscles of the organs of speech. (p. 16)

Kaplan (1960), in discussing the anatomy and physiology of speech, says that an interesting question is whether the intrinsic muscles of the larynx move during silent speech. He reports that Faaborg-Anderson has found increased action potentials in the vocal muscles while subjects were thinking without audible vocalization.

Sebasta (1964) defines decoding as the matching of appropriate vocal or sub-vocal responses to written symbols. He says that certain reading experts attempted to circumvent vocal or sub-vocal symbolization in the reading act. Structural linguists, however, according to Sebasta, do not accept this theory; electro-myographic experiments substantiated the linguist's viewpoint that sub-vocal behavior accompanies so-called silent reading. If this is so, then sub-vocalization may be viewed as providing a kind of internal speech practice. If the lack of consistency between letter and sound causes confusion, then it is conceivable that such internal speech practice might strengthen

incorrect speech habits and be deleterious. On the other hand, a consistent relationship between sound and symbol might serve as sub-vocal reinforcement of correct patterns.

The Use of Auditory-Vocal-Visual-Graphic Relationships in Speech Therapy

We have examined some theoretical considerations concerning these relationships. We wish now to explore some more direct applications to speech and language problems.

According to Kantner and West (1960), in speech correction there is a difference between education, and re-education. The significance of this difference lies in the fact that the re-education process requires a conscious attention to specific details. The child in speech therapy must become aware of likenesses and differences. Ainsworth (1948) points out that this awareness "...may involve three different sense areas, and whenever possible, all three should be exploited." (p. 60) Ainsworth is referring to auditory, visual, and kinesthetic awareness. It is the auditory area that is most emphasized in speech therapy, but Ainsworth says that particularly in the early stages of training, all avenues should be employed freely.

Van Riper and Smith (1962) point out that in speech therapy, a great many children with articulation problems are unable to correct their own errors because they cannot break down word wholes into their component parts. Although they often know that they have difficulty with certain words, they cannot tell exactly what is wrong. In ear

training, the authors say, "We must join our 'mind's mouth' to our 'mind's eye'." (p. 18)

In an article in The Reading Teacher (1964), Van Riper says that research has shown that many articulation cases are deficient in what he calls vocal phonics skills. He believes that training in these skills is essential in helping children speak correctly. He says:

> Reading, writing, listening, speaking are all closely linked together, and the basic linkage is the language symbol. Whether we deal with reading or speaking skills and disabilities, we find ourselves always confronted with the formulation, transmission or reception of language symbols.... Speech consists of sequences of sounds, much like the letters of a word. (p. 505)

Van Riper (1954) says that it is wise to associate the sound with a symbol, either in script or in printing. He says that discrimination of sounds involves recognition, identification, and association with symbols and differential bodily reactions.

According to Powers (1957):

> Oral reading should not be overlooked as a means for securing excellent articulation practice. It can be adapted to all levels of training, from single words to continuous text. The visual cue provided by the printed word is a needed temporary aid in many cases. (p. 800)

West, Ansberry, and Carr (1957) in a discussion of dyslalia, point out that both speech and reading defects are frequently found in the same child. Their comment is that treatment, in such cases, should consist of sense training along all lines- visual, auditory, and kinesthetic.

They say: "In addition to speech therapy, the linguistically incompetent individual should have special help in reading, in written composition, in listening, and in oral language." (p. 406)

Methods and Materials

A search for more specific suggestions of methods and materials utilizing visual materials and graphic practice for very young children reveals very little. It must be noted, too, that some references to "visual stimuli" or "auditory-visual approaches" in speech therapy books appear to be referring to mirror work and speech-reading techniques utilizing visual lip movements, rather than to the use of writing and reading experiences as auditory-visual approaches.

For example, an interpretation for either case could be made in the following two quotations:

> Studies have demonstrated that, while either auditory stimulation or visual stimulation is effective in some degree, neither is as effective as combined auditory-visual stimulation (Johnson, 1948, p. 126).

> The visual approach not only complements but also reinforces the auditory (West, Ansberry, and Carr, 1957, p. 156).

Van Riper (1954) suggests simultaneous talking and writing, first writing the script symbol as he pronounces the sound, then doing the same for whole words. He believes that this is an excellent vehicle for the practice of a new sound, and that it also enriches the motor aspect of the performance.

The speech materials surveyed suggest word games, word lists, reading materials for ear training as well as for sound practice, stories, jingles, rhymes, and choral reading materials. There is also considerable use of word-picture combinations.

However, working with young children from five to seven years of age presents serious problems. Most of these materials are designed for the older child, who can read and write fairly fluently. Even when the material is specifically designed for primary grade children, it is usually too difficult for them to use easily. Therefore, much of the material is read to the child, rather than by the child.

The term "transcoding" is being used by some educators to indicate the kinds of multi-sensory integrated processes that would appear to be meaningful for many learning tasks. It is felt that speech therapy is a learning task that would benefit from such a "transcoding" approach. Thus, if visual-graphic materials could be simplified, as they are in i.t.a., then it should be possible to utilize an integrated auditory-vocal-visual-graphic approach to speech therapy with very young children in kindergarten, first, and second grades.

CHAPTER IV

A RATIONALE FOR THE USE OF i.t.a. IN SPEECH THERAPY

Introduction

The complexity of the English language, in terms of possible sound values of its written symbols, makes the use of such symbols difficult for young children. It is hypothesized that an augmented alphabet, such as the Initial Teaching Alphabet, would permit a multi-sensory approach that would be effective in speech therapy, in dealing with cases of faulty articulation. In order to explore this hypothesis, some comparisons must be made between the use of T.O. and the proposed use of i.t.a. in speech therapy.

Sounds and Symbols in Isolation- T.O.

We can use most consonant sounds and symbols in T.O. without difficulty, since there is a one-to-one correspondence for the majority of them. However, this is not true of all consonant letters, such as s, which can have the sound of /s/ or /z/ (and sometimes /zh/ as in measure, or /sh/ as in censure), or the letter c, which can have the sound of /s/ or of /k/ (and sometimes /ch/ as in cello, or /sh/ as in ocean), or the letter g, which can have the sound of /g/ or /j/ (or /zh/ as in garage).

Every consonant, in particular words, can also be silent.

We also run into difficulty with combinations of consonants, in which the individual letters lose their sound identities, such as ch, sh, wh, and th (in which not only do the t and h lose their identities, but the new combination has two possible pronunciations), as well as ph, and gh (which can stand for /f/ as in cough or be silent, as in though).

Vowels in T.O. create a much greater problem. It is impossible to equate a particular vowel symbol in isolation consistently with one particular sound. If we want to use a written vowel symbol in speech therapy, we must tell the child what sound we wish it to represent on each separate occasion.

Sounds and Symbols in Isolation- i.t.a.

In i.t.a., each written symbol stands for an individual phoneme, whether that phoneme is a consonant or a vowel. There are no combinations of letters. Such i.t.a. characters as ʃh , ʧ , ʒh , œ , æ are not combinations, but individual symbols. The symbol-to-sound relationships are always consistent ones. In sound-to-symbol relationships, there is some choice (c and k are interchangeable, and there is some choice of single or double consonants) but in these options, there is no wrong choice. Thus the sound of an i.t.a. character is as much a part of its identity as its written configuration.

Sounds and Symbols in Words- T.O.

In T.O., a child may be able to decode a word accurately in several ways. First, he can guess at it, using his knowledge of the possible sound values of each of its letters. (At least he is more likely to guess that s stands for /s/ or /z/ than for /b/ .)

Second, he may remember what the sound of the total word is from past experience with whole-word visual configurations. Brown (1958) points out that "Look and Say" methods of teaching word recognition construct words from a small set of recurrent letters, because the sound values of so many letters are not constant.

Third, he may try to decode the word through the use of phonics. Phonics is defined in a New York State Education Department Bulletin[1] in terms of its use in an elementary school reading program as "...a body of skills useful in recognizing the printed form of certain familiar words and in attacking new words." (p.3) Bronstein and Bronstein (1965) suggest that the term phonics indicates the name of an educational method of teaching reading, whereas phonetics is a term dealing with the scientific analysis of the sounds and sound systems of languages. They feel that this distinction between the two terms should be maintained. (This distinction is often not made in the literature, or in reading texts.)

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[1] Phonics and the A B C's . 1961 .

Phonic "rules" include the following, taken from various teacher guides and notes. C before e, i, or y has the sound of s; g before e, i, or y has the sound of j; w before r is silent; k before n is silent; when ed comes at the end of a word, it adds a syllable when preceded by d or t; ea and ee stand for long e, but so can ey, ei, or ie - and ie and ea in friend, and breath stand for short e. Phonic rules also are taught by such sayings as, "When two vowels go walking, the first one does the talking," (but not always), and "An e at the end of a word makes the vowel say its own name" (in home, but not in come). One old phonic device characterized the vowels as little fairies; the long sound of the vowel was the fairy's name and the short sound was her nick-name.

Duggans (1968) gives this advice:

> You are now ready to teach...your children the only rule they will need in order to read any word they say. You will teach them always to look ahead in a word to the very first letter after the first vowel. This letter will tell them if the vowel is long and says its name, or short and says its sound. [for example in the word potato]... The first letter after the first vowel is t. Does the t stay with the o or move on to the right? It moves on to the right whenever it is followed by a vowel...a vowel to the right of a consonant says its long sound or name; a vowel to the left of a consonant says its short sound. (p. 57)

Duggan suggests that in helping a child to write words, one should start with familiar one-syllable words that have long vowels sounds, and she suggests such words as road, game, and team. (Note the interesting spellings of these

words chosen for a young beginner!)

The unfortunate aspect of phonics skills is that there are many exceptions to the rules. It has been stressed by advocates of this method that the majority of words follow the rules, and that the child must simply learn the exceptions. But for many children, learning the rules is not only hard work, but frustrating. The point is not how many words are irregular, but that the child is not sure when- or which ones- or why- or why not; it does not require very many exceptions to shake some child's confidence in the whole system.

The fourth decoding method is through memory of the sound sequences of a particular word. The speech therapist can give the child an auditory model by telling him what the word is. By repeating the word, the child has an internal auditory model as well. But such an auditory stimulus loses its decoding value for speech if the child cannot recall the sound sequence when he is away from the therapist, or some other adult, when he encounters the written word. Foulke (1968) says that the difference between reading and hearing is that in the case of reading, you can look back; in the case of hearing, you can't listen back.

Van Riper (1964) says:

> A speech sound is a tiny thing, with a life span much shorter than the fruit fly's. It lasts but a fraction of a second and is gone. When an error is hidden within a word within a phrase within a sentence...the child is unable to recognize it. (p. 506)

If sound sequences and letter sequences provide a good fit, the child may be able to use visual symbols to help him recall the matching auditory symbols. If the written sequence does not match the auditory, there may be more confusion than reinforcement of recall.

Sounds and Symbols in Words- i.t.a.

When a child has learned the i.t.a. code- that is, when he knows all forty-four symbols and the sound value of each, theoretically he can decode any individual word. (He may have difficulty in blending; this is true in both i.t.a. and T.O., and is a skill that must be specifically taught to some children in speech therapy.) He hears, and he forgets; he sees, and he remembers. There is only one possible pronunciation for gœ or ſhω or antiedis-establiſhmenteræunism.

He is also theoretically able to write any word as easily as he can read it. Such writing could greatly strengthen the skill of auditory recall. It also could provide a means whereby a child could test himself. If he writes wed instead of red, he can read back exactly what he has written, out loud. Even if he cannot pronounce the /r/ sound correctly, he knows that he has chosen the wrong character to represent the sound that he wants.

Except for the few words written with the character ɾ, such as bird, turn, herd, girl, there is left-right visual and auditory directionality,

so that there is consistent sequencing fit. There are no silent letters, as in T.O. Nilsen (1967) points out that in i.t.a. this allows the reader to read from left to right, rather than having to skip over a consonant sound in search of a final e to determine whether the vowel is long or short before continuing with the rest of the word. i.t.a. helps develop the ability to transfer the sound sequences of a word to the symbol sequences, in a child's own head, and vice-versa.

Laurita (1968) says, "i.t.a. is the best instrument yet conceived for the simultaneous utilization of the various sensory inputs." (p. 226)

Hillis (1968) uses an eclectic approach for decoding techniques, which includes i.t.a. She says of her children, "They listen, they speak, they write, they read." She comments that it helps children with speech defects.

In i.t.a., sound sequence recall can be strengthened through writing, as well as through reading. Ohanian (1968) says of i.t.a. :

> The learning of the Sound-Symbol relationship is further facilitated through the aid of writing. That is, letter recognition and phoneme-grapheme correspondences proceed not only through the avenue of sight but more vigorously and assuredly through the recourse of writing...
>
> The coordination of knowing and saying the sound, hearing it, writing or "feeling" the shape as well as seeing the letter form, provides a sound strategy for learning. (p. 288)

Auditory Discrimination- T.O.

Suppose we wish to give a child discrimination practice for different initial consonant sounds. We want him to develop auditory discrimination, so we present a series of words that differ in only one element: /bo/, /do/, /go/, /so/, and /to/. If we also want him to see the difference for visual discrimination, we write the words we have just said: bow, dough, go, sew, and toe. Obviously, the visual discrimination task would be confusing, because in addition to the change in initial consonants, there are five different written representations of the same sound following the consonants.

How do we solve this problem, in speech therapy with young children? We either (1) cope with the confusion as best we can by picking our words carefully, or (2) use nonsense syllables and words, such as bo, do, to, and tell the child what they represent, or (3) we avoid the issue in our therapy groups by largely postponing the use of written words until a child is able to read well enough to cope with them, usually beyond the second grade level.

Auditory Discrimination- i.t.a.

Let us use the same examples for i.t.a. For auditory discrimination, we present the series, /bo/, /do/, /go/, /so/, and /to/. For visual discrimination, we write the words: bœ , dœ , gœ , sœ , and tœ (these are not nonsense syllables, but real words). Phonemically, and

graphemically, both series are composed of minimal pairs that differ from each other in only one aspect, which is the focus of the discrimination task. Friedus (1966) said that we must give a child the tools with which he can monitor his own responses. It would appear that i.t.a. can do this for a child, because the child is able to match what he says with what he sees, and what he sees with what he says.

i.t.a. provides system. Gleason (1961) says that if a written system does not represent the whole phonemic system, then the written representations of spoken material may be less clear than the speech that it records.

Brown (1958) says:

> When materials to be learned constitute a system it is possible to predict some of the materials from knowledge of others. Systematic learning occurs when principles are discovered which make it unnecessary to memorize detailed material... When recurrent sound-letter matchings are learned we acquire a set of principles telling us how to pronounce indefinite numbers of new words... (p. 72)

Sounds and Symbols in Context- T.O.

In an effective therapy program, a child must learn to use sounds correctly and meaningfully in his speaking, his reading, and indeed in his thinking. He must be able to recognize individual sounds, to differentiate between sounds, and to reproduce sounds correctly, whether in isolation, in words, or in context. It is with context material that we run into the most difficulty when we try to

use written symbols with young children in speech therapy. Children from five to seven years old can neither read nor write sentences, paragraphs, and stories on their own, except in a most limited way.

We try to use context material in T.O., but we run into difficulties because of its phoneme-grapheme inconsistencies.

For example, let us suppose that a child needs practice on any, or all, of the consonants and vowels in the following sentence: Tom has come home. We write the sentence on the board, or in his notebook, for him to practice. If he does not know the words, or was told what they were and has forgotten, he encounters the following possibilities in trying to decode the whole sentence correctly, in terms of its auditory patterns, on his own.

Three of the symbols in Tom has come home give the child little trouble; these are t, h, and m, which he is most likely to decode correctly, even though on rare occasions they each may be silent (as in listen, honor, and mnemonic).

There are many possibilities for the o in the first word, Tom, such as the sound of o in box, dog, go, love, to, how, and women.

There are several possibilities for the a in has, such as in mate, hat, father, ball, or says. There are two probable choices for the s in the same word, either /s/ as in sat, or /z/ as in as. The word has, with these examples,

thus has ten possible pronunciations.

There are two probable choices for the c in come, either /k/ as in cat, or /s/ as in city. There are the same seven probable choices for o as in Tom. There are at least seven possibilities for the e, as in me, pen, they, eye, few, sew, or with no sound at all- silent e. There are, with these examples, ninety-eight pronunciation choices for come.

In the word home, there are the same seven choices for o as in Tom and come, and the same seven choices for e as in come, so that home might be decoded as any one of forty-nine possibilities.

Let us go back to our original assumption- that the child does not know (or at least doesn't remember) the words in this sentence, and must decode it auditorially purely on the basis of his knowledge of the symbols and some of the possible sounds that each symbol might represent. What are the odds that the child, on his first try, will be able to say this entire four-word sentence, Tom has come home, correctly? Mathematically, the chances are 1 in 336,140. This is an exaggerated example perhaps, since some of the individual sound values are more likely to be chosen than others. But it becomes obvious, in the face of such odds, why a young child must develop a large sight vocabulary, and/or must try to use phonics rules, inconsistent or not, in order to cope successfully with the traditional orthography of our language.

Sounds and Symbols in Context- i.t.a.

We will assume, as we did in the example given for T.O., that a child does not know the words in the sentence given to him in i.t.a., and must decode it auditorially on the basis of his knowledge of the forty-four symbols, and the sounds that each of them might represent. What are the decoding possibilities for "tom haz cum hœm" ? There is only one possible pronunciation for each symbol, and thus for each word, in this sentence. What are the odds that the child, on his first try will be able to say the entire sentence correctly? Mathematically, the chances are 1 in 1- as compared to 1 in 336,140 in T.O.

(It is important to note that in both examples, for T.O. and for i.t.a., we are here discussing performance, as opposed to knowledge of the meaning of the sentence.)

Conclusion

The rationale for using i.t.a. in speech therapy for children with articulation problems is based on the following: (1) Because an auditory-vocal-visual-graphic approach to speech therapy would appear to be an effective one, and (2) because the inconsistencies of the traditional orthography of English make it difficult to use written symbols in isolation, in words, or in context, in speech therapy with primary grade children, and (3) because the Initial Teaching Alphabet presents a logical and consistent phoneme-grapheme relationship which appears to

overcome many of the problems of T.O. in speech therapy with young children, --- therefore, i.t.a. should provide an effective means of using written symbols in isolation, in words, and in context, in an auditory-vocal-visual-graphic approach to speech therapy with young children.

CHAPTER V

A CRITICAL ANALYSIS OF i.t.a. AS A MEDIUM FOR SPEECH THERAPY

Introduction

According to Mountford (1964) there are two prerequisites for a pertinent discussion of i.t.a.: (1) a clear terminology, and (2) a knowledge of how it works linguistically. The purposes of this chapter are to examine i.t.a. from the point of view of an analysis of its individual characters, the sources for its pronunciation rules, and its spelling rules for words. We shall also explore some of the problems that these rules, formulated for initial reading instruction, may pose in the application of i.t.a. to speech and language therapy.

The Basis for i.t.a. Pronunciation

Professor D. B. Fry, a phonetician of University College, London, served on the original British Committee. Downing (1966a) says:

> To provide a standard for British publishers and printers, particular pronunciations had to be selected from the very wide variety in our islands, and these have been chosen to give the maximum benefit in terms of current comprehension and eventual transition to all children in all parts of the country. (p. 88)

According to Pitman (1961), the original Augmented Roman alphabet was based upon

> ...that carefully articulated, sometimes Scottish, speech which is widely understood and accepted when delivered from public platforms, the stage, over the radio, or on the talking film, but which, it must be admitted, probably no child speaks in precisely that form. (p. 18)

Although it would thus appear that British pronunciation served as the primary basis for i.t.a., Pitman (1968) asserts that this is not so. He writes:

> It is not true that I have based the spelling of i.t.a. on the British pronunciation called R.P. (Received Pronunciation). I have denied it frequently.... The pronunciation is an all-embracing one that will not be found in the speech of any one speaker, or of a majority of speakers from any one language group. (p. 57)

Pitman, in referring to the considerations behind the choice of each character, points out that no single choice was considered on its own, or apart from its relationship to each of the other choices.

British and American Pronunciations

There are some differences between British and American pronunciations that affect the use of i.t.a., and therefore warrant some discussion. Two of the guides used in the formulation of i.t.a. were Jones's English Pronouncing Dictionary (1937) and Kenyon and Knott's A Pronouncing Dictionary of American English (1953). In the preface to the latter, the authors point out a basic difference between the two. They say that Jones

> ...records the pronunciation of a limited and nearly homogeneous class of people in England in a type of speech identical with that of the editor himself. Our problem has been to

> record without prejudice or preference several different types of speech used by large bodies of educated and cultured Americans in widely separated areas and with markedly different backgrounds of tradition and culture. (p. v)

The British standard is called Received Pronunciation because, according to Bronstein (1960) it is heard or "received" in the "best" circles. Daniel Jones (1937) defines it as that pronunciation heard in everyday speech in Southern England of those who have been educated at the public schools. In contrast, as has been indicated, the United States does not possess such a single standard of socially preferred speech. According to Bronstein (1960) no one geographical standard is considered more acceptable than another, but is considered standard if it reflects the speech patterns of educated people of any particular community.

Pyles (1964), in comparing British and American pronunciation, notes that "...a difference in pronunciation is noticeable in about one fourth of all the words which the two languages hold in common." (p. 321) Some of these specific differences will be explored later in discussion of specific i.t.a. characters and spelling rules.

The Early-To-Read Teacher's Manual (Mazurkiewicz, and Tanyzer (1966b), gives this information:

> The alphabet does not make fine phonetic discriminations, and, indeed, is specifically designed to accommodate a wide range of speech patterns. As Sir James Pitman has said, "The printed word is silent, and the Initial Teaching Alphabet is a process of

> decoding words and not encoding sounds. Although the alphabet accommodates national and regional differences in pronunciation, the symbolic representation, or spelling of sounds, is consistent." (p. iv)

McBride (1965) writes:

> ...in some cases, the transliteration of certain words is different from what the teacher and or the children would expect. This is unavoidable if the representation of a word is to accommodate the regional variations in pronunciation and indeed variations in pronunciation due to the position within a speech pattern. (p. 10)

Dewey (1968) believes that phonetic writing is neither necessary nor desirable, because of the inability to set a fixed standard of pronunciation. But, he says, at the phonemic level, acceptable standards do exist. Pitman (1961) believes that although speech is a personal form, print is a standard form.

Some Linguistic Problems

The fact that some of the characters in i.t.a. have both primary and secondary values has been mentioned earlier in Chapter II. An example given by Downing (1965a) is for the character a . He says: "The primary value is a as in hat. In about , the a represents a secondary value." He goes on to say that the latter is maintained to conserve a resemblance to T.O. Most of the other secondary values of i.t.a. characters are based on considerations of transfer. Thus these considerations determined the decision not to introduce a special single character for the so-called neutral vowel, referred to as the schwa.

The schwa presents a problem even in phonetic transcription. Kantner and West (1960), in discussing the phonetic symbols [ʌ] and [ə], point out that they are exceptions to the general rule that a phonetic alphabet should have only one symbol for each sound. The first represents the same sound as the second, except that the latter represents the unstressed form which occurs in unaccented syllables.

Seymour (1968) in discussing allophones, says that an attempt to represent them in i.t.a. would have been unwieldy, but she suggests that both teachers and children should be made aware of them, and suggests that consideration of allophones be given in i.t.a. teachers' manuals.

Seymour also discusses juncture in regard to i.t.a. She says that children have a tendency, when they begin writing in i.t.a., to run letters together, such as iewenttwthe, without dividing the letters into word groupings. The child must be helped to hear pauses that separate letter groups into word units.

Discussion of i.t.a. Characters

The following lengthy Table lists (1) each i.t.a. character as it looks in print, (2) gives the name of each character, (3) gives a key word for each as a guide for pronunciation, and (4) makes comments where pertinent.

In reference to letter names, Brown (1958) points out that traditional letters sometimes have names that do not

even contain the sound most commonly associated with the letter, and he gives as examples the names of h and w. In i.t.a., the primary sound value of a character is included as a sound in its name. The short vowels have names that are closed with a consonant (at, et, etc.).

The order of presentation of the characters in the table is an arbitrary one. First given are those characters about which no comment seems necessary. The following ones are listed, along with some comments and criticisms that seem pertinent in terms of their use in speech and language therapy.

Before discussing the individual characters, several important aspects should be noted. The first of these is the doubling of consonants. Such double letters give the same sound value as the single consonant. The double letters were kept for ease of transfer from i.t.a. to T.O. In reference to this, Pitman (1961) remarks, "If the child will need to transfer to the visual image letter, why- if little good is done- present him with leter?" (p. 18) However, Nilsen (1967) considers this a violation of the phonemic principle, since the doubling of consonants has graphic rather than phonological significance. He would thus consider such a double consonant a questionable sound-symbol relationship.

In reference to use of i.t.a. in speech therapy, this doubling did not appear to be a problem for the second graders reported on in Chapter VII. However, in the case

study reported on in Chapter VI., this caused a great deal of difficulty. There was a tendency for this child to say what he saw- and thus to say "bil-l", etc. Within a word, such as "yel-low" the auditory repetition of the sound is not as much of a problem as when the doubled consonant is in the final position.

One other aspect of i.t.a. should be emphasized. Whereas the reading adult tends to see the i.t.a. digraphs as letter combinations, the beginning reader does not; he sees each digraph as one single character, which is how he is supposed to see them. Although the children in the speech projects done as part of this report were all familiar with T.O., they also accepted the i.t.a. digraphs as unique sound symbols, even though many of the children were aware of their visual similarity to T.O. consonant clusters.

TABLE 2

i.t.a. CHARACTERS

i.t.a. character	name	key word in i.t.a.
b	bee	bell
p	pee	pen
t	tee	tap
f	ef	fæt
v	vee	vɑis
g	gae	gœ
h	hæe	hat

i.t.a. character	name	key word in i.t.a.
l	el	let
m	em	man
n	en	nest
ŋ	ing	riŋ
ʃh	ish	ʃhop
ʒ	zhee	televiʒon
ie	ie	tie
æ	ae	æt
ee	ee	eet
œ	oe	nœ
u	ut	up
e	et	egg
i	it	it
ow	ow	hows
oi	oi	boi

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a	at	at

Comment: This character is sometimes printed with a shortened top loop in some British books to indicate a sound between a and ɑ. According to Crouch and Leedhair (1964), it is primarily a device used by printers. It is not counted as a character on its own.

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i.t.a. character	name	key word in i.t.a.
d	dee	duck

Comment: A slight curl is added to this character in some print to help differentiate d from b in case of reversal tendencies.

---

c	kee	cat
k	kae	kᵉ

Comment: c, k and ck follow traditional spellings, as in the words cat, kᵉ, tobaccᵒ and back. T.O. x becomes ks as in boks; T.O. qu becomes kw as in kwᵉn. In writing, the child has a choice of using either c or k. Mountford (1964) points out that some consonant characters, such as these two, share the same primary values in i.t.a. Nilsen (1966) believes that i.t.a. violates several phonemic principles. This illustrates such a violation- that is, more than one symbol for the same sound. Pitman (1961) says of this:

> After all, to allow more than one character for a single phoneme does no great harm- certainly one not to be likened to allowing a single character to represent more than its own single phoneme. (p. 16)

In regard to the use of these two characters

in speech therapy, they caused no apparent confusion, and were a help in clarifying whether c had the sound of /s/ or /k/, as in traditional orthography. Downing (1965a) feels that it would be possible to reduce the number of alternatives for c , k , and ck , but such a reduction might be less satisfactory for transfer.

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th	thee this
th	ith thum

Comment: Some children tend to confuse these two voiced and unvoiced sounds and symbols. These two symbols may cause some slight difficulty for children who tend to have reversal problems.

---

wh	whae when
w	wae wet

Comment: Some speakers do not discriminate between these two sounds. The two separate symbols are used in i.t.a. (1) for transfer to words spelled with wh, and (2) to accommodate those speakers who do view these as two separate phonemes.

ω	oot	fωt
ɷ	oo	mɷn

Comment: The visual similarity of these two characters and W are matched by their similarities in sounds, according to Pitman (1961).

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s	ess	sand
Σ	zess	boiΣ
z	zee	zœbra

Comment: Words spelled in T.O. with the letter c having the sound of /s/ use the i.t.a. S as in the word ice - ieS. Words spelled with the letter s having the sound of /z/ use the i.t.a. zess, as in the word eyes - ieΣ. . Words traditionally spelled with z having the sound of /z/ use the i.t.a. zee, as in the word zoo- Zɷ. Pitman (1961) says that these three symbols form a three-cornered relationship: Z \ Σ / S

Nilsen(1967 describes the zess as an s with sharp corners. He says that although it is not purely phonemic, it deviates only when there is strong graphic motivation.

The S ⁻ Σ relationship gives visual configuration and direction. There were a few reversal problems between the Σ and Z , but the use of these three characters has been found to be particularly useful in speech therapy, especially for those children working on /s/ and /z/ errors.

ɾ	ɾae	ɾed
ɾ	uɾ	gi ɾl

Comment: Since the introduction of i.t.a., the addition of the character ɾ has been the only change. According to Downing (1966b), the purpose of this addition was to make the neutral or central vowel, when followed by the letter r, more effectively characterized. The ɾ appears only in combination with certain vowels- what Mountford (1964) calls "multi-character vowels"- ir, ur, er, and or. i.t.a. spellings retain the preceeding vowel, when combined with ɾ . The use of this character solved some problems and created others; notably, this is the only character that causes the breaking of the consistent left-right directionality of i.t.a. As one first-grader said, "ur does

funny things to words." This character caused confusion when used in speech therapy.

ʧ chae ʧin

Comment: Downing (1966a) says:

> In the interests of preserving resemblance to traditional orthography, the following alternative i.t.a. spellings ought to be used for this sound: If t precedes ch in standard spelling, it is retained in i.t.a. (p. 98)

An example would be the word match - written in i.t.a.- maʧ . This will be discussed under spelling rules, in the next section.

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j jae jam

Comment: Downing (1966a) gives ʤ- juʤ- and d-sœlʤier- as alternative spellings for this character, j . These will be discussed under spelling rules.

---

y yae yes

Comment: Downing (1966a) says that this character is used in words such as the key word given. The character i is substituted for it in words such as million- in i.t.a.- million . The character ue will be found, rather than the character y in such words as due- in i.t.a.- due .

Nilsen (1967) believes that the character y violates the phonemic principle because it

represents two different sounds: (1) the first sound heard in the word yes, and (2) the last sound heard in the word jelly. He adds, however, that these sounds are in complimentary distribution, so that perhaps the same symbol should be used for both.

Mountford (1964) says that the character y has a primary sound value as a consonant, and a secondary sound value as a vowel.

In reference to speech therapy, this character caused considerable confusion for some children.

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ue	ue	due

Comment: Mountford (1964) says that this character is unique in that it represents a sequence of sounds. This sequence can also be represented as ɛɛω or y.

ɑ	ah	father
o	ot	hot
au	au	sau

Comment: Many American speakers do not differentiate between i.t.a. ɑ and o. When they are differentiated, the i.t.a. o resembles [ɒ] which is a sound that can be considered to be intermediate between [a]

and [ɔ] . It is not a common American English vowel, but it is found in British Received Pronunciation. The sound suggests [o] but is briefer. It is sometimes called the British "short o" (Wise, 1957b). It is also used by some people in the New England area. Jones (1937) lists, in his key words for R.P. English phonetic symbols:

[ɑ:] - father
[ɔ] - hot
[ɔ:] - saw

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i.t.a. Spelling and Pronunciation Rules

In planning for the use of i.t.a. in speech therapy, we need to examine not only the individual characters, but some of the ways in which they are meant to be combined into specific word units.

i.t.a. writing has been made to resemble traditional writing in two ways, according to Mountford (1964), first, by the visual similarity to T.O. of many of its characters, and second, by the influence which traditional spelling of words has exerted upon i.t.a. spelling rules.

The Mazurkiewicz and Tanyzer Handbook (1965a) makes this statement:

> Correct English pronunciation varies from nation to nation, from region to region, and even from individual to individual. If each user of i/t/a encoded according to his own pronunciation, chaos would result. Certain

> rules have therefore been devised by Sir James Pitman to make i/t/a spellings uniform and international, adopting compromises when necessary between various national and regional pronunciations. The criterion... has been to obtain the closest possible resemblance between the i/t/a-spelled word and its t.o. equivalent. (p. 1)

The standard was that normal spelling for words should not be changed, or changed as little as possible, as long as the word in i.t.a. would represent a cluster of sounds that would be recognized and accepted as one of the cultured versions of spoken English. The standards were established for publishers and printers in order that a consistent visual image of words and sentences would be presented to a child.

Transition to T.O. was a major factor in the formulation of general rules for letter combinations, as well as for specific individual words. Although this concern for transition has created some problems, it is undoubtedly one of the reasons why i.t.a. is successful as an initial reading alphabet. Pitman has stated, "Phonetic accuracy must never be allowed to interfere with success in making the transition where an approximation is adequate to identify and understand a word." (Mazurkiewicz and Tanyzer, with Pitman, 1965a).

There are a number of general guidelines for spelling rules that will be discussed here, with specific reference to the use of i.t.a. in speech therapy. Some of them have been mentioned before, but bear repeating in this specific framework.

Traditional Spellings

Wherever possible, traditional spellings are retained.

Double letters

Double letters, when they represent traditional spellings, are retained in i.t.a. As indicated earlier, this can create some problems in speech therapy for some children.

The Schwa, and other problems

Since there is no schwa in i.t.a., traditional spellings are often retained in unstressed syllables. Some examples are sœfa, mountæn, button .

The i/t/a Handbook (Mazurkiewicz et al, 1965a) states: "The reader will drop the control and reassert it, and will reduce the stress and reinforce it, all without its being necessary to interfere with the spelling." (p. 11)

The children in our speech studies appeared to be able to do this; as a matter of fact it gave them greater understanding of how stress affects all word patterns, when this was specifically discussed with them.

In i.t.a., as in T.O., sometimes more syllables are written than are ordinarily pronounced, as in the words ɛvening and twwaurds.

There were two problems that were difficult for the one child reported on in Chapter VI: a as in a cat, and ðe as in ðe cat were read by him exactly as written (in phonetic transcription, [æ cæt - ðə cæt]). These two words, a and ðe were puzzling to him because the

visual pattern of sounds did not match his pronunciation. (This was true of other i.t.a. words, but these were the ones that consistently bothered him.) i.t.a. spelling of ðe was used to avoid the varying sound values of this word's final vowel in different contexts, and to preserve visual similarity to T.O. because of its high use frequency. The latter is also true of ɑ .

In regard to these, as well as to other compromises, the average child does adjust, and learns to skim over the words, or accepts them as sight vocabulary words. Problems in speech therapy seem to arise in those cases in which a child has learned to be highly analytical and resists such skimming precisely because he has come to trust the i.t.a. sound-symbol relationships.

Whereas in most words there is no weakening of the primary sound value for a schwa sound, there is one change, in the use of ω for ɷ in the words tɷ and intɷ. This seems somewhat inconsistent. Nilsen (1966) feels that the use of ω in such words is of questionable value.

Specific Rules

1. ɾ

The character ɾ is used to show its influence on a preceeding vowel when the sound value is that heard in heɾ, biɾd, buɾn, giɾl .

This creates some confusion and directionality problems since it is the only character that violates the

rule of reading left to right. A child tends to read bi - then sees ɾ, and must go back and change bi to biɾ for biɾd.

Children in our speech studies who readily related the symbol ɾ to the sound [ɜ] as in the word err, often wrote just ɾ to represent that sound and the preceeding vowel - as an example, bɾd. This made more sense to them than the visually varying forms biɾd, heɾ, tuɾn, etc. They would prefer to write bɾd, hɾ, tɾn.

2. t

The character t is kept in all words in which pronouncing dictionaries indicate that it is sounded in the speech of some cultured speakers. Some examples, where one might not expect to find it, are often, ʧestnut and soften. (The latter, according to the Handbook, also preserves the linguistic relationship between soft and soften.

This character is also retained in words in which one would expect to find the symbol ʧ. Some examples are nætuɛr[1] and kwestion.

It is also kept when it preceeds ʧ, as in the word maʧ. Some speech therapists will question the use of both t and ʧ in such words. For some children experiencing difficulty with ʧ, this combination may be helpful

[1]This form is particularly interesting in view of the fact that the word was formerly pronounced this way, as noted by Bronstein (1960). Bridges, in his book English Pronunciation (1913), as a matter of fact, decried the changing shifts of pronunciation of such words as nature, creature, and Christian, in which the /t/ was being lost to /ch/.

in terms of visualizing an articulatory movement from t to ʧ which brings about a clearer sound production of the latter.

3. d

This character is kept in some words such as handsum. It is sometimes found where one would expect to find j, as in the word sœldieɾ. d is also kept in words where one would expect to find j, as in badʒ. But unlike the t-ʧ combination, however, where some justification for the retention of both letters might be made for visual transfer to T.O., the combination here is not d-j, but d-ʒ, which is not found in T.O. words. Where it may not be a great problem in such words as bridʒ, it becomes most confusing in such a word as judʒ, in which initial and final sounds match auditorially, but not visually. It would seem that if d must be retained for easier transfer, then dj would be preferable to dʒ.

4. y, i ɶ, ʉɶ

Confusions caused by these characters have been pointed out in the discussion of individual characters. As in other compromises, an attempt has been made to preserve traditional spellings as much as possible. Thus we have the i.t.a. words pity, million, funny and yʊ. The y-ɶ confusion presents a very real problem for some children in speech therapy.

5. ɀ

The use of this character, called zess, enables the child to relate the S and ɀ visually in T.O. and in i.t.a. words, which makes transition easier for many common words, such as iɀ, aɀ, hiɀ etc. Since children in speech therapy, particularly those working to correct lisps, are often confused with the visual letter s- auditory sound /z/ combinations, the use of this character in words has been helpful.

6. ɛɛ and æ

Nilsen (1966) points out that one sometimes finds ɛɛ where i might be expected, as in hɛɛr, and æ where one might expect e, as in the words dæær and hæær.

Such words were a problem to a few children in our project, but most of them had no great difficulty with them.

7. O Before r

The most serious problem encountered in this study was the use of O before r in such words as door, for, horse, etc. This was particularly true for those children working on r errors, who encountered these words, written with the O character, as dor, for and hors. It was found, however, that it was not easy to agree upon an acceptable substitute. Two alternate choices would be i.t.a. ɑɯ or œ.

. Bronstein (1960) discusses variations of [o] for historical long o plus r, and says that leveling to [o] for such words as for, four, morning, and mourning seems to

be on the rise in this country. Fairbanks (1940) says that [ɔ] is commonly used before [r] in such words as door. Pyles (1964), on the other hand, says that many people in the United States, Canada, Northern England, and Scotland use [o] in four, oar, and door. Nilsen (1966) would expect to find i.t.a. œ in these words, rather than O.

Suggested Changes in i.t.a.

Downing feels that some of the i.t.a. characters might need to be modified.[2] He points out, however, that redesign of a particular character may prove to be a superior design in isolation, but may cause confusion in context. An alternate approach suggested by him would be to deal with any difficulty presumed to be associated with a particular i.t.a. character through instructional procedures. Downing (1966a) says:

> The overall effect of the design of i.t.a. and its rules of spelling is to symbolize in print the speech of someone who, if speaking in that way, would be easily comprehended by the child hearing it. (p. 91)

In an article called "Can i.t.a. Be Improved?" (1967b), Downing expressed an opinion that there is a need for more research in reference to modifications of i.t.a. He suggests, for example, that the use of C and k for the same sound adds to the child's learning load and is a source of mystification to him. He also raises questions concerning

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[2] i.t.a. foundæſhon report, (1967)

the retention of double letters. In a paper presented at a recent conference,[3] Downing also questioned the use of the i.t.a. character ue, that might be interpreted as ee(w), in which case the character ue does not signal the correct number of phonemes. In reference to keeping silent letters, such as the t in catch, he feels that this may involve too many meaningless choice points for the child.

We may summarize our own problems in the use of i.t.a. for speech therapy by saying that in general, wherever compromises have been made for the sake of reading, in terms of later transfer to T.O., such compromises cause some problems for some children, when i.t.a. is used in speech therapy. In our projects, when a problem arose, we attempted to explain the use of a particular character, or we told the child in some instances that the pronunciation, as written, represented the speech of a particular writer. On several occasions, this led to some interesting discussions of regional differences of speech, and served to make these young children more aware of sounds and users of sounds in their English-speaking world.

Modifications of i.t.a. for Use in Speech Therapy

Duffy (1968a) comments on the possibility of modifying "correct" i.t.a. spellings as a useful device under special circumstances, such as its use in speech therapy. Block

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[3] Fifth International i.t.a. Conference, Hofstra University, New York (1968a)

(1963) points out that, normally, the i.t.a. Foundation is opposed to changes in i.t.a. spellings, since such changes could lead to confusion and non-compatibility of materials. But he says that in personal communication with Sir James Pitman, the latter notes:

> I think it is right--where the circumstances are special and the difficulty for the learning child so great--to allow in the classroom an initial initial teaching medium.
>
> The child ought, however, soon be made to pass from the initial initial teaching form to the i.t.a. form, because otherwise the costs become prohibitive of meeting the needs of what can only be called a new Tower of Babel.
>
> Teachers of the deaf in different speech areas will, if they are good enough phoneticians, be able to create and hand-produce classroom material to meet the great range of variety, in speech of their pupils, but this will need to be only during the initial initial learning stage; but teachers will lose greatly if they don't soon get into the medium in which 900 books are printed and many more will be coming available. (p. 186)

CHAPTER VI

SPEECH AND LANGUAGE PROBLEMS AND i.t.a.- A REVIEW OF THE LITERATURE

Introduction

Block (1968), speaking of the use of i.t.a. with special groups, said:

> For the most part, the research in these areas has been conducted using relatively small and unique groups of subjects.... It appears to many educators that it is especially with groups which present unique learning problems that i.t.a. may be of greatest value.... In some cases, the additional discriminative clues provided by the characters and the simple correspondence of visual and auditory inputs seem to be ideally suited to the learner. (p. 150)

We are interested here in the use of i.t.a. and its effect on (1) normal-hearing children with speech and language problems, and (2) deaf and hearing-impaired children with speech and language problems.

General Comments Concerning Speech

In reviewing the literature, one finds many references to the effect on speech of i.t.a. when used for reading instruction. Downing (1966a) says that "Speech may also be influenced by the use of i.t.a., for when children write as they speak, teachers have an additional means of detecting bad habits of speaking in their pupils." (p. 39) Downing

(1961), in a report on the use of i.t.a. in remedial reading, said that an improved standard of speech was noted in the i.t.a. group.

An i.t.a. Foundation report (1966) says:

> ...If a child hears a word incorrectly, and writes it in i.t.a. as he hears it, i.t.a. may prove to be a useful tool to aid in the improvement of speech and hearing difficulties. (p. 18)

According to Seymour (1968):

> The fact that i.t.a. attempts to link more consistently the phoneme and the grapheme, apparently makes the teacher much more observant of speech sounds. (p. 422)

Peddler (1965) reports on the use of i.t.a. with cerebral palsied children, who may have visual, hearing, and perception problems, as well as general delayed maturation. He feels that i.t.a. helps them to build up confidence in their own abilities. Dr. John Duffy, of Brooklyn College, N.Y., has also found i.t.a. to be successful in speech and language training with the cerebral palsied child.

Teacher Observations and Comments

The following are comments which seem pertinent, concerning the effect of i.t.a. on speech, from the teacher's point of view:

> As teachers we want to help the child's speech patterns, too. When a youngster writes in i.t.a., he puts down exactly what he hears... They write "wide" for "ride", and "fodder" for "father". Since the children can write daily, these errors are frequently brought to the teacher's attention and corrections can be made. i.t.a. is a tool children can use to help themselves (French, 1965, p. 11).

> Creative writing in i.t.a. is important for evaluating speech difficulties (Loring, 1968).
>
> Observers have noted that improvement in speech is a natural by-product (Mazurkiewicz, 1964, p. 10).
>
> Reports of principals and teachers: "There appeared to be an improvement in the speech habits of pupils using i.t.a." - "Reduces minor speech problems" - "Speech generally improved" - "Irregularities in speech are easily detected in writing" - (Shoemaker, 1968, pp. 139-141).

Hillis (1968) , who uses i.t.a. combined with other decoding techniques, discussed the importance of balancing auditory, kinesthetic, and visual senses. She uses this combined technique with children who have speech defects, as well as with children who have other problems.

Kirkland (1968) writes of her observations concerning the speech therapist in her school:

> It was interesting to note the remarks of the Speech Teacher concerning the children in i.t.a. who went to her twice a week for speech therapy, in comparison to children from the regular classrooms....She indicated that they made more progress because they listened to the sounds and made more of an attempt to duplicate them and correct their speech. They made progress because they were more interested in playing the "sound games" and put a great deal of effort into it. They returned to the classroom more quickly than did the children who had learned to read using T.O. (p. 118)

Some of the speech therapists in schools involved in experimental i.t.a. studies with whom the writer discussed i.t.a. were enthusiastic about it, though they complained of a lack of materials for speech therapy for those children who knew only i.t.a. symbols.

Teachers at i.t.a. workshops attended by the writer have made comments that it is easy to pick up articulation errors because children write as they speak, that general speech improved in remedial reading class without specific work on speech, that i.t.a. children have improved auditory discrimination ability, that they become aware of each other's speech problems and help each other, and that they are more able to do self-correction.

Some teachers make similar comments about speech in non-i.t.a. classrooms that are using various linguistic or language arts oriented reading programs.

It may well be that such teacher comments are reflecting the fact that i.t.a., as well as these other reading programs, may have a noticeable effect upon the teacher as well as the children because such programs force the teacher to become more aware of sound-symbol relationships.

The Deaf Child- Some General Considerations

The deaf child, or the child with seriously impaired hearing, can be expected to have difficulty with all aspects of language. Myklebust (1960) asks:

> Why have not the methods for language training been more successful?...A basic reason might be that undue emphasis has been placed on the expressive function (speech) without sufficient stress on the development of inner and receptive language....Although vision is a less suitable channel through which to acquire a basic language, we can assume that the deaf would acquire language receptively more readily if it were a visual symbol system. (p.235)

Blanton, et al (1967) observes that deaf students tend to use graphemic cues more than hearing children in the process of decoding words. He says:

> The relative utility of visual cues in association and retention of words has not been adequately investigated, so that the degree to which such cues may function in either deaf or hearing subjects is still an open question.... We might predict...that graphemic cues providing for the visual decoding of words might effectively substitute for auditory decoding in the deaf. (p. 225)

Rush (1966) discusses the teaching of written language skills to deaf children, and says that this is an area of major concern for teachers of the deaf.

According to Lenneberg (1967), in America a child is usually four or five years old before intensive training in language is begun. When such training begins, he says, "There is a decided unwillingness to put too much reliance on the graphic medium." (p. 320) Many schools also instruct parents not to use writing for communication in the home, in the belief that it may interfere with the development of oral skills.

Lenneberg says:

> Thus there can be no doubt that the deaf come in contact with language at an age when other children have fully mastered this skill and when, perhaps, the most important formative period for language establishment is already on the decline; furthermore, their contact with language samples, even at this late age, is dramatically reduced in amount in comparison with the amount of language to which a hearing child is exposed. (p. 321)

Lenneberg believes that the failures in language

proficiency are not due to inherent learning incapacities, but rather to shortcomings in instruction and training. He adds, "The argument that early acquaintance with and recourse to reading and writing is detrimental to these children's skills in oral communication is without evidence." (p. 322) Lenneberg believes that language instruction of the deaf would profit from greater access to written material and greater freedom in writing at an early age.

Furth (1968), in discussing deaf children at a conference on language and reading, said that if you have a visual system that can be turned into expression and communication, these children can learn language.

Furth (1966) suggests that encouraging non-verbal methods of instruction and communication both at home in the earliest years and in formal schooling would avoid possible experiential deficiencies in the deaf. He says that in cases of insufficient hearing, parents must have recourse to distinguishable signs and use these, along with speech. He believes that practically all deaf children, instead of the present ten per cent, could then be expected to reach a basic competence in the use of English.

Furth believes that when language is taught too late, it becomes remedial learning, rather than first-language learning, and he thus makes a plea for non-verbal teaching methods, at least initially. He says:

> The following statement is admittedly speculation but it is in accord with all we know about the psychology of language

> acquisition: The deaf child fails to acquire language because it is taught too late, in an unreasonable medium, in an unnatural way, and by the wrong person. (p. 206)

The Use of i.t.a. with the Deaf and Hearing Impaired

The normal child learns auditory-vocal-visual-graphic language relationships in the order given. Perhaps we could solve some of the language-learning problems of the deaf if we could reverse the order to visual-graphic-auditory-vocal. This we can do with i.t.a.

Larr (1967), in referring to the use of i.t.a. with the hard-of hearing, says that there are obvious advantages to using a system in which children think in terms of sound values. He feels that World i.t.a. helps with language rhythm by indicating stress patterns.

Pitman (1964) asks if i.t.a. would not be helpful in the teaching of speech and lip reading. He discusses the value of i.t.a. in the integration of verbal skills, both receptive and what he terms emissive. In another article (Pitman, 1967) he says that i.t.a. should be used by the parent of a deaf child at as early an age as possible, such as the age at which the normal child is learning the articulation of sounds. He says:

> ... It has been clear to me (ever since I recognized the service to the deaf which in their time flowed from my grandfather's and Alexander Melville Bell's association) that it would be necessary to adapt i.t.a. somewhat for the purpose of teaching speech rather than that of teaching only the visual form of a language... (p. 20)

This adaptation became World i.t.a. Pitman, in the same article, went on to say, "The sounds in words...are evanescent... The characters in black and white, and thus the representation of sound, are permanent and may be studied and restudied." (p. 20)

Dr. John Duffy has perhaps been the most active, and the person most interested in exploring the use of i.t.a. in the special areas of speech and hearing. He says, in an article in the Volta Review (1966a):

> The static quality of the visual symbol might be easier to remember as a visual image than the brief, transient auditory symbol is to remember as an auditory image. (p. 151)

Duffy stresses structure, simplicity and proper sequencing as basic to communication. In referring to the use of i.t.a. with the hearing impaired child, Duffy says:

> It means that his auditory perception and spoken language are interchangeable with his visual perception through reading and the visual-motor act of writing; each enriching and reinforcing the other. (p. 151)

Duffy (1966b) wrote:

> If the normal hearing child, before the age of two years, can learn to associate in a meaningful way the fleeting, complex auditory symbols which make up the spoken word to the objects and actions they stand for, why should he not be able to attach meaning to visual symbols, written or printed words, at a comparable age? ... Assuming that the mind can store visual images as easily as auditory images, it would seem logical that language can be developed through visual means as well as through the auditory sensory avenue. (p. 186)

In referring to i.t.a., Duffy says, in the same article:

> With the i.t.a. there is no doubt that very

> young children with a hearing impairment can learn to associate meaning to words printed in i.t.a., can learn to write these words, can learn to say these words, and can learn to articulate the individual sounds for which the letter symbols stand. In the process, language concepts will evolve. In other words, reading, writing, speaking, and language develop simultaneously. (p.188)

Specific Studies- Introduction

Seven studies will be reported on in this review of the literature. They include two on the use of i.t.a. with the deaf, one on sound discrimination and speech proficiency, one on speech improvement in a first grade classroom, and three on speech and language therapy.

Infant Deaf Children- Duffy

Duffy, in a report for the Fourth International i.t.a. Conference in Montreal, described and showed films of a very young deaf child learning speech and language through the use of i.t.a. In the printed proceedings of the conference (Duffy, 1968 a), he raises questions of when should speech and language be taught, in what medium, in what way, and by whom. The child in his study had the benefit of powerful amplification and early language stimulation and speech perception training that involved professional personnel and her parents as well.

Duffy outlines the phases involved in the speech and language training of the speech and hearing impaired child, which include development of a working vocabulary,

association of words and objects, production of isolated sounds, and association of spoken and written symbols and words. He writes:

> The method herein described makes it possible for the hearing impaired child to acquire language and verbal communication skills at an early age before a non-verbal system of thinking becomes firmly established. It also allows for the more normal development of vocal and articulatory skills not found in the deaf child who learns to articulate speech sounds in a mechanical, monotonous manner at four or five years of age. Furthermore, the child does not suffer from a system of training where good articulation is subordinate to language development until speech habits are so firmly fixed that improvement in the articulation of speech sounds is very difficult if not impossible to achieve. (p. 216)

Duffy gave a further report on the use of i.t.a. with the deaf at the Fifth International i.t.a. Conference at Hofstra University, N.Y. in 1968. The title of his paper was "i.t.a. and the Very Young Hearing-Impaired Child - A Report of Progress."

According to Duffy (1968a):

> Children who have been provided with suitable hearing aids and intensive language training starting at or before one year of age and who have then received early training in reading, writing, and speech using Pitman's Initial Teaching Alphabet have developed language and speech ability to a degree far greater than was ever before thought possible, far greater than would normally be expected of such children using traditional "auditory training" techniques. (p. 216)

First Grade Deaf Children - Solano

Sister Solano, in reporting on this special age group, states that the hearing-impaired child requires instructional

sequences that are specially designed for him and him alone. A vital element is consistency. Through the use of the i.t.a., such a child is able to learn to read, write, and speak simultaneously. She says (Solano, 1968):

> The ordinary development of communication skills follows the sequence: language, speech, reading, and writing. For those severely impaired in hearing, this sequence becomes distorted. In this new sequence, meaning is first attached to the visual symbol, then associated with the auditory impulse. The child is initially presented with the consistent i.t.a. symbol to which he associates meaning visually, auditorially, and as he articulates it, kinesthetically. (p. 211)

For the six year old hearing impaired child to be able to express himself in writing, according to Solano, is a tremendous accomplishment. She says that after transition to T.O., the Initial Teaching Alphabet will be retained as a means of teaching speech, and that this will provide a consistent aid to which the child may refer if he has difficulty with pronunciation.

Sound Discrimination Skills and Speech Proficiency-Vallon and Ranellone

This is the report of a paper, read at the 1967 New York State Speech and Hearing Association Convention, on the effect of i.t.a. on the speech of first grade children using it for classroom instruction. The intent of the study was to determine (1) the effect of the i.t.a. reading program upon the child with marked articulation difficulty, (2) the effect of i.t.a. on sound discrimination abilities, and (3) the relationship of i.t.a. reading instruction and

sound discrimination.

Children were tested in kindergarten, prior to entering first grade, and again at the end of their first grade year. The analysis of the data on the T.O. control groups and the i.t.a. classes revealed the following: In terms of speech proficiency, the articulation improvement of pupils in the i.t.a. classes was significantly greater (by 37%) than that of the pupils in the control group. The sound discrimination skills of the children in the i.t.a. groups were markedly greater (by 81%). None of the pupils who had scored in the lowest quartile in sound discrimination in the i.t.a. classes was found to be a non-reader, while one-third of those assigned to T.O. classes in the lowest quartile were non-readers at the end of first grade.

The researchers point out several implications of their study (Vallon and Ranellone, 1967) :

> The fact that the speech of those pupils in I/T/A classes improved to a greater degree than those in T.O. classes speaks well of the 1-sound, 1-symbol approach that I/T/A provides and of the use of multisensory techniques which are inherent in an I/T/A program.
>
> The fact that although the differences in speech improvement were evidently greater among I/T/A pupils and yet not still greater points up quite clearly that I/T/A is by no means a panacea for meeting the needs of all speech problems of first grade children....
>
> We must, of course, consider the fact that some of the speech problems were probably maturational in nature and that some of the pupils might have acquired better speech spontaneously. What is sufficient, we think, is that from this pilot study it would appear

> that I/T/A tends to hasten this maturational process by its very nature, and in so doing, might eliminate at least some of the secondary emotional problems that might have developed along the way.

Speech Improvement in First Grade- Fiedler

This report was given at the 1967 convention of the American Speech and Hearing Association. The study was carried out in a public school system in Wisconsin. Fiedler measured speech proficiency by administering the Arizona Articulation Proficiency Scale to twenty-eight matched pairs of children. Her goal was to determine the effect of i.t.a. on articulation maturation. Her population consisted of seventeen elementary schools, one half of which used i.t.a. for classroom instruction.

All first graders were screened for articulation errors, and those with two or more errors were used in the study. During the time of the study, none of the children received either speech correction or speech improvement instruction.

At the end of the study, all of the children except nine had scores showing gains in articulation ability. Thus the data revealed speech gains in both T.O. and i.t.a. first grades. Fiedler reports that the i.t.a. groups showed a greater gain, but that it was not statistically significant at the .05 level of confidence.

Speech and Language Problems- Sharp

This is a report from the Proceedings of the Second

International i.t.a. Conference (Sharp, 1966). Sharp discusses the use of i.t.a. with (1) the child with simple articulation problems, (2) the child with articulation problems accompanied by personality and behavior problems, and (3) the language-deficient or aphasic child.

In giving some case histories, she makes several interesting points. The first is that when the acoustic, visual, and kinesthetic characteristics of sounds were pointed out to a child like John, age eleven, he was able to learn how to articulate a particular sound and to differentiate it from all other sounds. i.t.a. reading provided a visual monitoring device for him, and there was a marked improvement in his articulation problems.

Her second case report illustrated how self-confidence in both speech and reading developed through the use of i.t.a.

Her third category involved children who have great difficulty learning through exposure to the auditory symbol alone. In reference to i.t.a., Sharp says:

> The visual symbol in the beginning appears to be the stimulus to elicit the auditory memory...The visual symbol is further reinforced by kinesthetic learning through tracing, writing, and speaking. (p. 193)

She summarizes by saying that the child who is taught with i.t.a. develops oral language at the same time that he is mastering the written word. She writes:

> The child with a speech problem is a child who has not learned to identify and articulate all the speech sounds just by hearing them.

> The use of the visual symbol, therefore, is important in retraining him, and i.t.a. provides the ideal phonetic alphabet because of its close relationship to conventional orthography. (p. 194)

Articulation Therapy- Goldman

Goldman has done considerable work with young speech-handicapped children, using i.t.a. as an adjunct to articulation therapy. Goldman (1968) discusses the limitations of auditory training with pre-school children:

> Using only the auditory channel the child must take in phonemic information, store it within the central nervous system and be prepared to recall it appropriately when verbalizing. Some of this abstractness could be reduced if a set of visual symbols relating in a one-to-one fashion to the phonemic elements of speech easy for the preschooler to learn, were available. The unavailability of a set of visual-verbal symbols has limited the application of a truly multisensory approach to articulation training for preschool children. (p. 218)

He points out that traditional orthography does not lend itself to an auditory-visual approach because of its irregularities. He therefore devised a program to demonstrate the use of i.t.a. symbols as an adjunct to traditional speech therapy methods with preschool children.

He developed a set of materials which were first tested on normal children. The materials covered the areas of auditory discrimination, visual discrimination, sound sequencing, phonemic synthesis, and phonemic analysis. He says, "The visual modality incorporating i.t.a. symbols serves as the major form of stimulation used to facilitate

this training." (p. 219)

In a second pilot investigation in 1966, the program was used with twenty-four four and five year old children with articulation disorders. Half these children were given traditional speech therapy and half were given the i.t.a. speech therapy program.

Results of the study showed a greater degree of articulation improvement in the i.t.a. group, whose children showed a mean reduction of 25.58 articulation errors, as compared to the control group mean of 16.3 errors. The measuring instrument was the Goldman-Fristoe Articulation Test. This difference was found to be significant at the 5% level of confidence.

He also noted greater interest on the part of the children in the experimental group, as evidenced by a higher attendance level, as well as responsiveness within the group sessions.

Goldman concludes:

> ...The value of the Initial Teaching Alphabet, as a symbol system to be incorporated into speech therapy, seems most promising. Specifically, the application of a visual-sound-symbol system which bears a one-to-one relationship with the phonemic elements of speech should aid the speech pathologist in articulation training, particularly with preschool children. If young children can be given the opportunity to learn or relearn sounds which have consistent visual correlates, the process of speech therapy would be greatly facilitated. (p. 220)

Summary

This review of the literature has attempted to give

Speech and Language Problems- Vreeland

This is an account of an intensive program of therapy for Richie, a nine-year old boy with an extremely severe speech and language problem. The therapy program was based on the use of i.t.a. as the medium, and behavior modification techniques as the basic method. This child exhibited unusual verbal behavior, characterized by good vowel sounds and usually accurate syllable structure, but with no recognizeable whole words in his spoken vocabulary. His gesture language was extremely well-defined, and he was able much of the time to make himself understood. He has been receiving speech and language therapy since the age of four.

Despite physiological, psychological, and neurological examinations, diagnosis of his language problems remains unclear. He is not retarded and has normal hearing. He shows excellent understanding of language. There is a possibility that he is minimally brain damaged. At this point he has serious emotional problems. But whether he cannot use language for effective communication because he is emotionally disturbed, or whether he is emotionally disturbed because he cannot communicate verbally is difficult to determine.

His primary problem appeared to be one of recall. He could physically produce accurately, with stimulation, all sounds except /t/,/d/,/sh/,/ch/,/j/,and /zh/. He could imitate words, and even sentences up to three words in length, but could not initiate such utterances on his own.

A program of therapy using i.t.a. materials for speech, language, reading, and writing, was initiated in September, 1969. He was seen by the speech therapist (the writer) for one hour per day. i.t.a. is not used in the school district, nor in his classroom. He continued to do his regular work in traditional orthography. (He is attending a special class for children with learning problems.)

Base line notations charted over the 1969-70 school year showed remarkeable progress in all areas. The following table outlines his progress in speech.

TABLE 3

Case Study- Record of Progress

Base line- September, 1969	Base line- June, 1970
1. He could produce all sounds in isolation, with stimulation, except /t/, /d/, /sh/, /j/, /ch/, and /zh/.	1. He could produce all sounds in isolation with stimulation, though /j/ and /zh/ were distorted but recognizeable.
2. He could produce without help only the sounds of /b/, /m/, /k/, /g/, and /s/ with letter cards as visual stimulation.	2. He could produce the sounds of 37 of the 44 i.t.a. character cards, when they were presented visually.
3. Using picture test cards, he could not produce any names correctly.	3. Using picture cards, he could produce correctly 35 of the 78 picture names by February (44%) and 58 by June (74%).
4. In terms of feedback, he could not hear his own errors, but could recognize errors when simulated in the speech of the therapist.	4. In terms of feedback, he could correct his own errors when he realized that he had made them, through absence of correct response signals from the therapist.

Base line -September, 1969	Base line, June, 1970
5. In spontaneous conversational speech, there were no clearly articulated words.	5. In spontaneous conversational speech, charted over a five-day period in February, he used an average of 17 clearly articulated words per one hour session. In June, over a charted five-day period, he used an average of 30 clearly articulated words per one hour session.

He made comparable progress in reading, as well as in speech.[1]

There was a concomitant change in his personality in the direction of increased emotional stability and ego development, as measured through observations and through psychological projective techniques.

The i.t.a. therapy program of listening, speaking, reading, and writing apparently enabled this child to learn, stabilize, and recall, in a way that he could not do formerly. Perhaps the auditory-visual-vocal-graphic approach, possible with i.t.a., gave him a feeling of the interrelationships of language, so that with a better understanding of the structure of language, he is now able to generate specific items in more meaningful language patterns. i.t.a. is currently being used for a second year, with continued progress.

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[1] A more detailed report on this child was presented at the Seventh International i.t.a. Conference, University of London, August, 1970, and will be printed in its proceedings.

Summary of Studies

The seven studies included in this chapter may be summarized as follows:

Two studies indicate that i.t.a. appears to facilitate speech and language development when used with young deaf children.

Two studies reported on its use with first graders. Vallone and Ranellone indicated that both speech proficiency and sound discrimination skills were greater in the i.t.a. groups. Fiedler, who reported on its use for speech improvement, found that the gains of the i.t.a. pupils were not significant at the 5% level of confidence.

Sharp and Vreeland give observational reports of apparent gains through the use of i.t.a. with a variety of speech and language problems.

Goldman, using i.t.a. as an adjunct to articulation therapy with pre-school youngsters, reports gains in terms of mean reduction of articulation errors that are significant at the 5% level of confidence.

CHAPTER VII

THE i.t.a. APPROACH TO CHILDHOOD ARTICULATION PROBLEMS- A RESEARCH PROJECT

Purpose

Planning and implementing a research project involving articulation problems in a public school setting is a challenging assignment.[1]

The purpose of the investigation reported on in this chapter was to compare the effectiveness of an auditory-vocal-visual-graphic approach using the Initial Teaching Alphabet with the effectiveness of such an approach using traditional orthography, in the correction of articulation problems of children in a public school speech correction program.

More specifically, the purpose of the investigation was to test the null hypothesis that there would be no statistically significant difference at the 5% level of confidence, as measured by the improvement in articulation scores, between the two groups of children using these two different

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[1]For those contemplating such research, the writer would cite two particularly interesting references: "Problems in Articulatory Research: Methodology and Error" (Sommers, 1967) and "Questionable Assumptions Underlying Articulation Research" (Locke, 1968).

approaches, after one school year of speech therapy.

Population

The study was conducted in six schools of a school district that does not use i.t.a. in its curriculum. This study therefore investigated the use of i.t.a. as a medium for speech correction only, with no specific reinforcement in the classroom. This obviously constituted a very severe test of i.t.a.

Second grade children of three of the schools were used as the control groups, and second grade children of the other three schools were used as the experimental groups. The second grade level was chosen because, at least in this district, the largest single group of children with articulation problems is found in the second grade population. Two of the schools, one control and one experimental, were small neighborhood schools, housing kindergarten through second grade children. The other four schools (two experimental and two control) were regular K-6 schools. Thus an attempt was made to divide the schools so that the experimental and control school populations were as similar as possible.

This was more easily accomplished in this district than it might be in others because of the nature of the community. It has been described as a "mass-produced suburb" that is relatively homogeneous culturally and socio-economically, with only a small portion of the population in either high

or low income brackets. There are no estates, and no slums.[2]

All second graders in the district had been initially screened for speech problems according to standard speech department procedures. Of these second graders in the six participating schools, 112 took part in this special project.

Basic Procedures

The MacDonald Deep Test of Articulation (MacDonald, 1964b) was administered at the beginning of the school year, and again at the end of the year.

Of the 112 children in the project, seven were absent for the initial testing. In seven cases, the test failed to reveal a problem. The examiners were unable to agree on the test scores in five cases. Nine children were dropped from the speech program during the year for various reasons (schedule changes, moved from the district, etc.). Two were dropped from the study when hearing tests (administered to every child yearly) revealed hearing problems. Two were dropped from the experimental program at the request of their parents. Thus eighty of the original 112 were available for the final testing, thirty-eight in the experimental group, and forty-two in the control group.

After the initial project testing, children from the two groups were matched on the following: (1) The number of

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[2] The most comprehensive survey of this community was undertaken in 1954. Subsequent surveys have shown the same general situation in regard to its population.

sounds defective, (2) the specific sound or sounds found to be defective, (3) the initial score made on the articulation test, (4) sex, (5) the number of speech therapy sessions received per week, and (6) chronological age within six months.

All eighty children available for the final testing had normal intelligence, as measured by the Otis Quick-scoring Intelligence Test, and were free from hearing problems or any discernible organic problems that might be contributing to the articulation problems.

Using the six criteria listed, it was possible to match thirty of the eighty children. These thirty children were used for the final statistical analysis, using the Wilcoxon Matched-Pairs Signed-Ranks Test. All children in the final matched pairs had initial scores of zero on the MacDonald Test. All had defective /s/ and /z/ sounds.

The six criteria were chosen as variables which should be considered in matching in an effort to rule out as many factors as possible that might, if not controlled, affect the final comparisons. Matching on test scores, consistency of errors, and types of errors seemed to be of particular importance.

Baer and Winitz (1968), in discussing inconsistency of errors in articulatory responses, say that conceivably those children who are inconsistent in their errors should demonstrate more improvement than those who are consistent in their errors. Templin and Darley (1960) feel that

consistently misarticulated sounds are perhaps the most resistant to therapy. Locke (1968) says that the degree of intracontextual consistency in a test may be related to the resistance to extinction of error responses. The highly inconsistent misarticulation of a given speech sound seems less fixed, and more amenable to modification than the rigidly stereotyped production. Sommers (1967) cites both consistency and phonemic errors as factors which should be controlled , in articulation research. Judging from these observations, it would seem that our final matched pairs, consisting entirely of children who scored zero correct in ninety-two trials, were potentially the most resistant to articulation improvement of the total project population. This is worth noting, in view of the fact that the final scores of some of the children in the matched pairs did indeed indicate that there had been little improvement.

We also, as noted, matched for the specific sounds misarticulated. Locke (1968) states that the belief that "one misarticulation is about like any other" is a questionable assumption underlying some articulation research. He says:

> Some reports comment that all children in the experimental group had at least one misarticulation, but they do not say whether all children had the same kind of error.
>
> Some recent research indicates that the motor and sensory processes associated with speech-sound production and perception are highly dissimilar from one phone to the next ....

> More productive research concerning misarticulations should result if we consider the possibility that each defective sound is unique. (p. 113)

Testing Procedures

The initial screening for potential enrollment in the district speech program was done by each school therapist in June, prior to the beginning of this project in September. Aside from the initial screening, the participating therapists were not involved in any way with the project testing, and were given no knowledge of the test results, including which children were in the matched pairs and which were not.

The project testing was done by two independent therapists who did not know, either at the time of the initial testing or at the final year-end testing, which children were in the control groups and which children were in the experimental groups, or what the nature of the project was, other than that it involved articulation.

An orientation period prior to the testing was used to acquaint the examiners with the test itself, including scoring techniques. The test was administered to a group of children not in the project, in order to give the examiners some practice, and to standardize the testing and scoring procedures. During the testing the two examiners were seated so that they could not see each other's papers, and thus made their observations independently. The writer was present during this trial testing period. Other than this, the writer was not involved in the actual project

testing.

Of the 105 children initially tested (seven of the 112 participating in the project were absent), the two examiners failed to agree on five. This represents 96% agreement, which compares well with other inter-judge agreements cited by MacDonald for the Deep Test (MacDonald, 1964a).

The Test

Templin and Darley (1960) point out that the purpose one has for testing a child's articulation is a strong factor in the choice of test items and testing procedures. The MacDonald Deep Test of Articulation, Picture Form (MacDonald, 1964b) seemed appropriate for this project.

In discussing his test, MacDonald (1964a) makes the following points: Articulation is defined as a process consisting of a series of overlapping movements which place varying degrees of obstruction in the way of the outgoing air stream and modify the size, shape, and coupling of resonating cavities. A test of articulation, according to him, must be a test of movements. There are as many variations of a sound as there are phonetic contexts in which the sound appears.[3] A child may be able to produce a sound correctly in some contexts but not in others. Therefore, an adequate articulation test should be long enough to permit

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[3]MacDonald thus believes that the traditional, word-oriented, three-position tests do not present (or test) the phonetic contexts that occur in connected speech.

observation of the degree of variability that may be present in his speech.

MacDonald considers his test a vertical, or deep test, as contrasted to a test that presents three pictures for each sound to elicit productions of the sound in initial, medial, and final positions. (These latter he calls horizontal, or shallow tests.)

The picture form of the Deep Test consists of a booklet containing two sets of pictures mounted side by side, in such a way that each picture can be flipped over individually (MacDonald, 1964b).

The pictures on the left elicit responses for final positions, while the pictures on the right elicit responses for initial positions. For example, if the exposed picture on one side is house, the pictures on the other side are flipped one at a time to produce the responses "housepipe", "housetie", etc. Then, if the exposed picture on the other side is sun, the flipped pictures would produce "cupsun", "tubsun", etc. The child must say the two words as an uninterrupted sequence of syllables.

Consonants are divided into releasing sounds which start the syllable movement, and arresting sounds which stop the syllable movement. He identifies three types of consonants: (1) simple, (2) compound (a group of two or more which function as a single consonant, such as the st in step or fist), and (3) abutting consonants, which are adjacent, one of which arrests the first syllable, and the

other releases the following syllable, such as the s and t in history.

The Picture Form Deep Test provides a total of forty-six different phonetic contexts for each sound. Since each child in the matched pairs had zero scores on both /s/ and /z/ sounds, the total number of trials was ninety-two, which would appear to give a good representative sample of a child's articulatory behavior. In this project, raw scores were used, rather than percentage scores.

Baer and Winitz (1968) feel that a test should not be too long, or the subject may acquire the sound through stimulation and repetition. The project examiners felt that this happened on the MacDonald Test with some children.[4]

The Therapists

The three therapists used in the investigation were regular employees of the district who volunteered to participate in the study. Each therapist was assigned one control school and one experimental school. This seemed to be an important aspect of the study, since, in the opinion of some, the teacher or therapist variable can affect results in research designs. Dunn and Bruinicks (1968) emphasize this by saying that research designs should be utilized in which the teacher is kept constant across treatments.

One aspect of educational research sometimes mentioned

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[4]Actually, this in itself may be worthy of investigation as a predictive device for articulatory improvement.

in the literature is the Hawthorne effect, which may be defined as an improvement in performance consequent upon participation in an experiment, and independent of any other factor (Jones, 1966). It can also be defined as a phenomenon characterized by an awareness on the part of the subjects of special experimental treatment. In this study, the children did not know that they were receiving special treatment since every second grader in the experimental schools worked with the i.t.a. materials.

As far as the therapists were concerned, it was felt that the Hawthorne effect, if it does exist, was minimal, since each therapist had both a control group and an experimental group. The fact that new materials were provided for both groups made the entire project innovative, in a sense.

Some Questions

Before beginning this project, we posed some questions concerning i.t.a., as we proposed to use it, for which we hoped to find some answers.

1. What are the problems of implementation? i.t.a. is not easy to learn and to implement, although it may be easier for a speech therapist than for a classroom teacher because of the therapist's background and training which, through the study of phonetics, emphasizes sound-symbol relationships. She must still make an effort to learn and master i.t.a. as a particular system of notation. She may

encounter some confusion, because of her background, between IPA and i.t.a. symbols, such as i.t.a. æ as in ate and IPA [æ] as in at, and i.t.a. ĭ as in it, and IPA [i] as in eat.

2. How time-consuming is the teaching of the i.t.a. symbols, and the necessary practice in their use? Will it take valuable time away from actual therapy? We are referring here, of course to the use of i.t.a. in a school or clinic setting in which it is not used in the classroom, and must therefore be taught to the children by the speech therapist.

3. Will therapy sessions, given only once or twice a week, give the child enough practice in i.t.a. to meet the expectations set forth in the rationale in Chapter IV for its use in speech therapy?

4. In a school not using i.t.a. in its classrooms, will there be resistance from parents and teachers concerning its use in speech therapy?

5. What effect, in such a school, will the use of i.t.a. used in speech therapy have upon the child's reading, writing, and spelling in the classroom? Obviously, even if i.t.a. is of benefit in speech therapy, its value would be questionable if it caused major problems or confusions in other areas of learning. This would presumably not occur in a school that used i.t.a. in its classrooms.

6. Since i.t.a. was designed as an initial reading alphabet, what will be the overall effect of some of the

problems of spelling and pronunciation outlined in Chapter V?

7. How effective is i.t.a. for this particular age group, and this particular kind of speech problem, as compared to reports of its use with other age groups and other speech and language problems?

Methodology

Both group and individual orientation meetings were scheduled for the participating therapists.

General orientation included extensive discussion of the new workbooks and supplemental reading materials, with full exploration of their purposes, the specific plans for their weekly use, and ways in which they could be used effectively.

The therapists were trained in the use of i.t.a. as a medium for speech correction. In addition to the initial training, there were on-going meetings throughout the year to discuss problems and applications. Meetings were also held regularly to discuss the control groups. Each therapist had a copy of the i/t/a Handbook for Writing and Spelling (Mazurkiewicz and Tanyzer, with Pitman, 1965).

Materials

Each school in the district is supplied with the same basic speech correction materials that include professional reference books, books for pupil use, games, and various other kinds of therapy materials. Three specific kinds of new materials were added for this project: (1) commercial

i.t.a. materials such as symbol cards and flash cards[5] (equivalent T.O. materials were already available), (2) workbooks written in i.t.a., with identical ones written in T.O., that were specially prepared for this study (Vreeland, 1967), and (3) supplemental reading material from Scholastic Book Services in matched sets printed in i.t.a. and in T.O. These supplemental reading books were selected for content that would provide practice material for the most commonly misarticulated sounds in this age group, /s/, /z/, /r/, and /l/. They were: The Adventures of the Three Blind Mice, by Ivimey, Caps For Sale, by Slobodkina, Do You Want To See Something?, by Merriam, What Do You Say, Dear?, by Joslin, Zany Zoo, and Clifford, The Big Red Dog, by Bridwell, How Animals Sleep, by Selsom, and Waggles and The Dog Catcher, by Cook.

We felt that the use of the same materials, except for the alphabet medium, in both experimental and control groups, was an extremely important aspect of the research design. Downing (1968b) emphasizes that if you want to study the medium, you must control the methods and the materials. While Downing's research design varied only the alphabet and kept the materials constant, many of the United States studies made use of specially designed materials in their experimental groups only. Downing feels that if the

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[5]These materials, and others, are available from Initial Teaching Alphabet Publications, Inc., New York, Greater Cleveland Reading Program, Ohio, and various companies in England and Canada.

materials are different only for one group, then it becomes impossible to draw valid conclusions as to the effect of the alphabet as a variable.

The workbooks provided lessons that were incorporated into the therapy sessions. The purposes of the lesson material were to provide practice in listening, speaking, reading, and writing, and to correlate these by using a controlled reading vocabulary. Such a controlled reading vocabulary would not have been necessary, at least theoretically, for the i.t.a. group, but it was necessary for the T.O. group. The reading words used in the speech workbooks were taken from representative basal readers and word lists appropriate for second graders.

There are three different workbooks, one for s and z, one for l, and one for r. They are a parallel series, with identical lessons wherever possible except for the practice words presented, so that they can be used for either homogeneous or heterogeneous groups of children.

Suggestions for workbook use included the following:

1. The i.t.a. characters were referred to as sound symbols, with the explanation that each symbol has its own sound. Throughout the year, differences between spellings and sounds were emphasized. This was true in the T.O. group as well.

2. Sounds and symbols were introduced first in isolation and their visual-auditory relationships were emphasized. Sometimes the practice proceeded from visual (what the

symbol looks like) to auditory (what it says). The procedure was also reversed and proceeded from auditory to visual. The i.t.a. alphabet cards and flash cards were used. In addition, each i.t.a. workbook included an individual picture dictionary for reference.

3. Since i.t.a. was being used with children who were reading in T.O., the differences between the written word in T.O. and in sound symbol writing were clarified whenever necessary. This did not appear to cause confusion. In referring to such simultaneous exposure, an i.t.a. Foundation report (1966) states that the research with i.t.a. shows that the two alphabets do not present problems for children. Some children simply report that they have their school alphabet and their home alphabet, and they see no conflict between the two.

This seems to be similar to the experiences of the children in this project. They had a classroom alphabet and a "speech alphabet."

4. Listening skills were emphasized in both groups.

5. In both experimental and control groups, skills in sound identification, auditory discrimination, and correct production in sounds in words were emphasized. In the i.t.a. group it was much easier to show the visual-auditory relationships in a clear, logical manner.

It was not possible to match the methodology completely for both control and experimental groups since the medium necessitated some differences in approach in the two groups.

However, general speech correction procedures were similar for both experimental and control groups.

Statistical Analysis

The Wilcoxon Matched-Pairs Signed-Ranks Test, a non-parametric statistical measure, was used for statistical analysis. Test statistics were calculated at the termination of the project for the thirty children in fifteen matched pairs, on the basis of a two-tailed test.

The test data are given in Table 3. Analysis of the data failed to show any statistically significant differences, at the 5% level of confidence, between the two groups of children, those using i.t.a., and those using traditional orthography.

In eight of the fifteen pairs, the i.t.a. child showed a greater gain in articulation scores than the matched T.O. child, as compared to seven of the fifteen pairs in which the T.O. child showed the greater gain.

Discussion of Research Project

1. Learning and implementing i.t.a.- the therapists
   Orientation to i.t.a. for the therapists was not difficult, and took relatively little time.
2. Learning and using i.t.a.- the children
   The therapists reported that the children were enthusiastic about the idea of learning a special "speech code." There was initial discouragement expressed by the therapists because some groups had

TABLE 4

SUMMARY OF DATA WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST

	Final Test Scores					
Pair #	Control Group -	Experimental Group +	Difference	Rank	Summed Ranks -	Summed Ranks +
1	0	92	+92	14		+14
2	73	0	-73	10	-10	
3	1	2	+1	1.5		+1.5
4	85	8	-77	12	-12	
5	91	92	+1	1.5		+1.5
6	64	70	+6	4		+4
7	79	92	+13	5		+5
8	0	5	+5	3		+3
9	53	0	-53	8	-8	
10	92	0	-92	14	-14	
11	0	23	+23	6		+6
12	21	77	+56	9		+9
13	76	0	-76	11	-11	
14	87	44	-43	7	-7	
15	92	0	-92	14	-14	
			Totals-Summed Ranks		76	44

T = 44

(At 5% significance level for two-tailed test, T = 25; therefore, T = 44 is not statistically significant, and the null hypothesis is confirmed.)

trouble learning the characters. One therapist reported many minor problems in the beginning. She said that the children were used to writing in a certain way (for example, with capital letter forms) and found it difficult to change. Another therapist felt that in the early stages it was easy to lose sight of the goals of speech therapy in the time spent teaching the i.t.a. symbols. On the other hand, the actual teaching of the symbols, according to the third therapist, constituted an excellent opportunity for ear training and auditory discrimination.

The therapists all felt that the teaching of the symbols did take time away from therapy, and that there was thus not enough time for the children to learn the symbols thoroughly. This was particularly true since the scheduled therapy sessions did not give some children enough practice time. Therapy sessions extended over a forty week period. Six of the children were scheduled for thirty minutes per week. The remaining twenty-four received two thirty minute lessons per week. A statement from Downing (1969b) concerning reading, which may also apply to speech studies, is that i.t.a.'s effectiveness seems uncertain in remedial situations when the exposure to i.t.a. is for only a brief time each school day, and the child uses T.O. most of the time. He says that under such conditions i.t.a. is sometimes successful, but sometimes neutral in its effect.

3. Reactions of classroom teachers

None of the classroom teachers opposed the use of i.t.a. for speech therapy, though some were initially doubtful as to its potential value.

4. Reactions of parents

We did not call our project i.t.a., but "speech reading" and "speech writing". We referred to the characters as sound symbols. However, at the beginning of the project one parent wrote a note, asking, "Is this i.t.a.?" When told that it was, she said that she had read about i.t.a. and was very pleased that her child was using it. Most of the parents were interested, but unconcerned. Two parents objected to the use of i.t.a., and asked that their children not use it. One wrote: "I feel that my child needs help with her lisp, but I do not want her learning I.T.A." The other parent wrote:

> It is my opinion that the words are doing more harm than good. The words are spelled the way they sound and I am all for this but it is very confusing for _____. He learns one way in the classroom and then he learns a different kind of spelling and pronunciation in your room. One contradicts the other. I would go along with this program if it followed through all the way. We want to help our son with his speech but cannot see any future in this method. Maybe some other solution is possible.

Neither teachers nor parents were given any specific instructions concerning follow-up of i.t.a., except the normal advice given concerning all children, because it was felt that this would introduce a

variable difficult to control. Our theory was that each teacher and each parent would be normally supportive. In fact, it may not have worked out this way. Block (1968) says of some of the reading experiments that ambivalent feelings of some parents toward a new medium may have put the experimental group in a less advantageous position.

5. Reading, spelling, and writing in the classroom

One child created a problem for a time because she decided to write everything in i.t.a. in the classroom and refused to use T.O. Other than this incident, there were no difficulties in the classroom. Some teachers were particularly concerned about spelling at the beginning of the project, but there appeared to be no difficulties in this area. Several teachers reported that children getting i.t.a. in speech therapy used better word attack skills and seemed generally more adept in their regular second grade phonics work.

6. Reading- In speech therapy sessions

Reading, in general, appeared to be somewhat easier for the i.t.a. children. They had less difficulty in reading the workbook material than the children in the T.O. groups. In regard to the supplemental reading material, which was used to give additional speech practice, the observation was made that neither group had much difficulty, though there were

both good readers and poor readers in each group. The comment was made that many T.O. children read haltingly, word by word, whereas i.t.a. children tended to read more fluently. i.t.a. children were better able to figure out words for themselves with a little encouragement, both in the workbook lessons and in the supplemental readers. One therapist reported, however, that although they could figure out the words, some were inclined to use their i.t.a. dictionaries (part of their workbooks) as an "easier" way than expending the effort needed to decode them on their own.

7. Writing- in speech therapy sessions

Writing was more difficult for the i.t.a. children than reading. (This is, of course, also true of T.O.) The therapists reported that although assignments were given for i.t.a. writing, and the children were encouraged to write in i.t.a., they found it difficult. One therapist said some children did not choose to write in i.t.a. if they could write in T.O. On the other hand, some children used i.t.a. for creative writing outside of the speech assignments, and enjoyed doing so. One child, during spring vacation, wrote a letter to his therapist:

dɛɛr------

iɛ mis yω vɛrɛɛ maʃh. it iz æ niɛs dæ tedæ ʃhe plæn riɛd waz vɛrɛɛ niɛs. wɛɛ ar gœɛɛŋ siɛt sɛɛɛŋ. lav miɛk..

8. Spelling and pronunciation rules

In regard to spelling and pronunciation rules, each of the problems discussed in Chapter V created a difficulty for some children, but none of the problems caused difficulties for all children. In all cases, the problems were minor ones that did not greatly interfere with the adaptation of i.t.a. for speech therapy.

9. Use of workbooks

Both the i.t.a. and T.O. children enjoyed using the workbooks. They liked the feeling that they were making progress as they moved through the workbooks.

10. Motivation

The most outstanding difference between the experimental i.t.a. group and the control group was the greater interest and motivation evident in the i.t.a. children, which was observed and commented upon by all the therapists. It is interesting that the same observation was made by Goldman (1968) in his study reviewed in the previous chapter.

11. Other general comments

There appeared to be a greater awareness of auditory-visual relationships, and development of more discriminative listening skills in the i.t.a. groups. One therapist said that i.t.a. was particularly useful for vowel sounds, and felt that it could be used as a supplemental aid, much as IPA is currently

used by the therapists. Another therapist stated that she would use i.t.a. in preference to IPA because of i.t.a.'s closer relationship to T.O. The therapists indicated that although this project provided an interesting and challenging professional experience, they did not feel that it should be continued for a second year, in view of the lack of significant progress that could be attributed to the use of i.t.a. with the children of this particular age level with this kind of articulation problem.

12. Future use.

At the end of the study each therapist was asked whether she would continue to use i.t.a. in speech therapy. All three thought that it could be used effectively with some children, and indicated that they would continue to explore its use with other age groups, with children who have severe problems, and with children who are in need of individual therapy for speech and language problems.

CHAPTER 8

SOME CONCLUDING REMARKS

In this report, an attempt has been made to consider the nature of our English language in terms of its phoneme-grapheme relationships, and to outline some of the attempts to improve these relationships through spelling reform. In this respect, particular attention was given to those movements that provided the background out of which the Initial Teaching Alphabet grew.

The i.t.a. has been described in terms of what it is, how it works, and what it may be able to do for some children, with particular reference to an auditory-visual-vocal-graphic approach to speech and language therapy and a rationale for using i.t.a. in such a multi-sensory approach.

Some criticisms of i.t.a. have been given, along with some evidence of what it may not be able to accomplish. In view of the fact that the Initial Teaching Alphabet was formulated as a medium for <u>reading</u> instruction, its characters and its spelling rules have been analyzed in terms of its application to speech, and pertinent critical comments have been made concerning problems that should be

considered for some children in its contemplated use. for speech and language therapy.

Professional Interest

There has been considerable professional interest in i.t.a. and its relationship to speech and language problems. One evidence of this has been the number of reports given at professional meetings. Within the last few years increasing numbers of reports involving speech and language problems have been given at i.t.a. conferences and other special group meetings. In our own speech and hearing profession, reports concerning various aspects of i.t.a. have been presented at meetings of the Speech Association of America, New York State Speech and Hearing Association, and the American Speech and Hearing Association.

Studies

A survey of reports and studies relevant to speech and hearing problems has been given in this report. The few studies that have been done give us information about the shortcomings and the successes of i.t.a. when it is used in the areas of auditory discrimination, speech proficiency, general speech improvement, articulation problems, and problems of deaf and hearing impaired children. Our own research with a second grade population failed to show statistically significant differences in articulation gains between the use of i.t.a. in the experimental group

and traditional orthography in the control group. It would appear from this study that i.t.a. has little to contribute to articulation therapy with this particular school population, with the particular kind of articulation problems that they evidenced, at least under the circumstances of the reported experiment. It has been, and is currently being used with considerable success in our district in the remediation of other kinds of speech and language problems.

Need For Further Research

We believe that there are several areas in which there is a need for additional research in the use of i.t.a. in regard to speech and language problems. The report of its positive use with one child in our district with severe speech and reading deficiencies has been given .It may well be that it is with such children- those with problems in all areas of language including speech, reading, and writing- that i.t.a. may prove to be most promising. Further research is surely needed here.

Very little is known, other than from subjective reports, about the effects of i.t.a. on the speech and language problems of children in i.t.a. schools, where there is exposure to i.t.a. on a daily basis. We would like to know, in such situations, about the immediate effects on speech, as well as long-term effects. Our second-grade study tested i.t.a. under very stringent conditions; we would

like to know more about what happens under optimum conditions.

We would like to devise methods of exploring, if possible, the question of whether the significance of i.t.a. may lie, not in the materials presented to the child during therapy, but in the processes that i.t.a. may develop, through which a child is able to understand, internalize, and utilize auditory-vocal-visual-graphic relationships in listening, reading, writing, and speaking .

In i.t.a. schools, as well as in non-i.t.a. schools, we would like to know more about what effects i.t.a. has on (1) different kinds of children, such as slow learners, retarded, brain-injured, and others, (2) different age groups, and (3) different kinds of speech and language problems, such as organic problems, functional problems, multiple articulation problems.

We would like to explore further the effects of i.t.a. and perhaps other reading programs on auditory discrimination at the pre-school and primary grade levels.

Concluding Remarks

The primary goal in the writing of this dissertation has been to explore a way in which speech and language remediation might be carried out more effectively. Although our research has indicated that the Initial Teaching Alphabet is not a panacea, it seems apparent that with

certain children with particular kinds of problems, i.t.a. may be a valuable tool for the speech therapist in working with sounds and symbols with speech and hearing handicapped children.

PLEASE NOTE:

Page 159, Appendix I:"Individual Record Sheet for a Deep Test of Articulation," © 1964 by Stanwix House, not microfilmed at request of author. Available for consultation at The City University of New York Library.

UNIVERSITY MICROFILMS.

Appendix 2

Data- Second Grade Project - Matched Pairs

Pair #	Name (Initial)	Sex	School #	Birthdate	Times per Wk. sessions
1-c	W	M	1	12-2-60	2
1-x	E	M	4	9-10-60	2
2-c	Ri	M	3	11-21-60	1
2-x	Ro	M	2	6-13-60	1
3-c	L	M	5	11-10-60	2
3-x	R	M	6	8-24-60	2
4-c	M	M	5	10-13-60	2
4-x	A	M	2	5-13-60	2
5-c	K	M	1	9-1-60	2
5-x	R	M	2	5-2-60	2
6-c	M	M	1	3-28-60	2
6-x	R	M	4	1-14-60	2
7-c	R	M	1	1-29-60	2
7-x	K	M	4	4-18-60	2
8-c	J	M	3	10-29-60	1
8-x	B	M	2	6-12-60	1
9-c	R	M	1	5-15-60	1
9-x	P	M	2	6-3-60	1
10-c	T	F	5	2-7-60	2
10-x	M	F	4	1-8-60	2
11-c	A	F	1	6-18-60	2
11-x	L	F	6	5-17-60	2
12-c	D	F	1	2-28-60	2
12-x	J	F	6	7-7-60	2
13-c	B	F	1	5-27-60	2
13-x	C	F	6	11-20-60	2
14-c	M	F	5	11-2-60	2
14-x	J	F	4	9-10-60	2
15-c	B	F	1	9-12-60	2
15-x	S	F	2	3-27-60	2

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The writer was born in Colorado, where she spent most of her childhood. She received her B.A. degree from Colorado State College of Education, and her M.A. from Hunter College, N.Y.

She taught English at Hilo High School in Hawaii, and was instructor for an extension course in speech improvement for the University of Hawaii. She spent two years teaching speech and drama at College High School, Greeley, Colo. before marrying and coming to New York, where she began her work as a speech pathologist.

Her clinical experience includes work at the Speech Rehabilitation Institute, New York City, and the Nassau Cleft Palate Rehabilitation Center, Hempstead, N.Y. She has spent most of her professional career as a public school speech and hearing therapist. She is currently Coordinator, Division of Speech and Hearing, Department of Pupil Personnel Services, in Levittown, New York.

She is a member of the American Speech and Hearing Association, and holds Certificates of Clinical Competence in both speech and audiology. She is also a member of the Long Island Speech Association and the New York State Speech and Hearing Association.

In addition to the Workbook Series used in the i.t.a. project, she has written a book for use in speech therapy on the primary level which has been accepted for publication, and is the author of a children's story which is to be part of an anthology published in the near future by Whitman Company.