Software Reviews

Évaluations des ressources informatiques

A Special Section

Ed Rodgers, Computer Review Editor

In a recent Clinical Forum section of *Language, Speech, and Hearing Services in Schools* dedicated to computer use, Cochran and Masterson (1995) outline several factors that hinder computer use by clinicians, including limited access to computers and lack of training. We would add that another factor which may limit those with access and training is lack of knowledge about programs that could be useful. This special section of the Resource Reviews is dedicated to computer software programs that are potentially useful to speech-language pathologists. The programs reviewed here are a very small selection of the explosion of programs that have been released in the recent past. Some of the reviewed programs have been written with speech-language pathology explicitly in mind. Others are designed for clients — namely augmentative-alternative communicators — who are seen by SLPs as well as other professionals. Still others — the Living Books series — were not explicitly designed for therapy, but can be adapted for use in the clinic.

The reviews cover several areas within speech-language pathology. In the area of adult language assessment, two computerized versions of frequently-used tests, the Boston and the Western Aphasia Battery, are reviewed. For child language assessment, a program that assists in the administration of a commonly-used test, the CELF-R, is evaluated. In addition, one of the available programs for language sample analysis, Computerized Profiling, is reviewed. Also evaluated is a tool designed to aid in the assessment of reading problems, the Dyslexia Screening Instrument. A number of programs that involve stories, the Living Books series, are reviewed in terms of their potential use in clinical intervention.

Two programs reviewed, Mind Benders and Thinkanalogy Puzzles, were designed to assist in cognitive assessment and intervention. We also include reviews of three programs that are designed to facilitate augmentative and alternative communication: Boardmaker, Screendoors, and Speaking Dynamically.

As any computer user knows, software programs vary widely on their ease of use as well as the sophistication of the hardware needed to run them. Reviewers were asked to comment on the "user-friendliness" of each program and to list hardware requirements. For readers who may be unfamiliar with computers and their associated terminology, Ed Rodgers has provided an introduction and overview.

Readers interested in an overview of clinical applications of computer technology would enjoy perusing the Clinical Forum of *LSHSS* mentioned earlier (July, 1995, volume 26).

References

Cochran, P. S., & Masterson, J. J. (1995). NOT using a computer in language assessment/intervention: In defense of the reluctant clinician. *Language, Speech, and Hearing Services in Schools, 26,* 213-222.

Some Basics/Terminology

Ed Rodgers, Computer Review Editor

A small dose of terminology is important when talking about technology. Most modern computers can be described in terms of three physical units: **central processing unit** (CPU), **memory**, and **input/output** (I/O). These components are referred to collectively as **hardware**, a reference both to their physical reality and to the difficulties inherent in changing them. In contrast, and for opposite reasons, computer programs and their data are referred to as **software**. A computer program is really a set of instructions, such as "add this to this", "subtract that from that", "if this is bigger than this, then skip that", etc. Instruction sets are stored in memory and acted upon by the CPU. Therefore, memory is a device (hardware) that stores and retrieves symbols (usually numbers), and the CPU is a device (hardware) that transforms symbols in ways specified by the instruction set (software). Data (software) comprise the information on which the instructions operate, and also are stored in memory. Confusion can exist about what is hardware and what is software. One system's hardware could in fact be another system's software. For example one system may use a co-processor specifically for drawing graphics on the screen while another system will do that operation from software. Engineering trade-offs usually govern such a choice.

Software for a typical computer system comes from several sources: some is provided by the manufacturer, some is purchased from independent sources, and some is written by users. That which is usually provided by the manufacturer is the computer's **operating system** (OS). This is the set of instructions that manages the computer system's resources. For example, the OS interacts with the user, coordinates the transfer of data between primary and secondary storage, decides where in memory to store the various programs and data, schedules the execution of programs, and keeps programs from interfering with each other. The other main category of software comprises **applications programs**. These perform specific functions and are usually purchased but could be created by the user. Most of the reviews in the journal will be of this type, that is, programs that the user purchases for specific purposes.

It is important to realize that both hardware and software contribute to the **user-interface**. The equivalent terms user-interface and human-machine interface refer to the interactions between computers and their human users. The terms refer more to the form or means of interaction that to the results of the interaction. One's ability to accomplish useful work with a computer system depends not only on the set of possible operations (i.e., programs), but also on the user-interface. In the disabled users' world this becomes a critical issue since many disabled users do not access the computer as their able-bodied counterparts do. The term **user-friendly** has been coined during this computer evolution. Webster's New World Dictionary defines friendly as "not hostile", "supporting", "helping", "favourable", and "desiring". These describe well how a good user-interface should act.

Computerized Boston

Chris Code, Manjit Heer, Matt Schofield

Cost: $57.00 (US)
Publisher: Psychological Corporation
System Requirements: IBM compatible computer

Western Aphasia Battery Scoring Assistant

Andrew Kertesz

Cost: $150.00 (US)
Publisher: Psychological Corporation
System Requirements: IBM compatible computer with 286 processor or higher, VGA monitor, DOS 4.0 or higher, graphics printer
Reviewer: Barbara Purves, School of Audiology & Speech Sciences, University of British Columbia

The purpose of both the Computerized Boston (based on the Boston Diagnostic Aphasia Examination) and the Western Aphasia Battery Scoring Assistant is to assist clinicians and/or researchers with analyzing and maintaining patient data collected using the respective assessment batteries. Each program is also capable of generating a report of the patient's results.

Both software programs are intended for clinicians and researchers. The programs allow clinicians to enter data and keep patient records in computer files and are designed to facilitate classification of patients by aphasia profiles. Both programs are capable of generating reports. In the case of the Boston, this is limited to patient scores; the WAB Scoring Assistant also has text and graph capabilities. For those using patient data in other ways (for example, as part of a broader data base), both allow export of files to other data bases or programs.

The Computerized Boston is a much older program (1989) and, accordingly, quite limited in comparison with the Western Aphasia Battery program (1994). It is strictly a data entry program in which the user enters data into a patient profile (replicating the score sheets of the Boston Diagnostic Aphasia Examination) after working out all scores. Classification is facilitated by the program only to the extent that it plots the patient's scores onto different profiles (e.g., Wernicke's, Broca's, etc.), allowing the clinician to compare the patient's profile against each classification.

The Western Aphasia Battery Scoring Assistant is also primarily a data entry system. Whereas the Computerized Boston program has no capacity for calculations, this program does all calculations necessary for scoring the WAB. In addition, the program is capable of pattern recognition, and therefore calculates for the clinician the best "fit" of patient scores to a profile. There is an override capability, so that the clinician is able to exercise his/her own judgement in interpretation of scores. The report generated by the program includes a patient data sheet with text entry (limited to varying degrees in each section), a summary of scores, and a graph of the patient's results plotted on the range of scores for a selected profile.

The Computerized Boston includes the program itself (on diskette) and a short manual describing its operation. In reviewing it, I used a 386 IBM with Hewlitt-Packard LaserJet printer. The program was user-friendly in that there were no problems in accessing it, entering data, or printing results, but it was disappointing in its limitations. For example, patient files could be exported only in their entirety, so that if scores were to be used as part of a different data base, all scores would have to be exported and subsequently edited.

The Western Aphasia Battery Scoring Assistant includes two diskettes, one of which contains the manual for the program, and one for the program itself. In comparison with the Computerized Boston, the software has benefitted from the technological advances of the intervening five years. However, with this increase in capability there has been some loss in user-friendliness. Although the use of a diskette manual is appreciated in that it keeps production costs down, some hard copy information about installation and accessing the program would have been helpful in resolving some of the problems in loading and using it. The diskette manual, while relatively easy to access on the computer screen, was frustratingly difficult to print. Only designated sections could be printed at all, and these, though ultimately printed, required sometimes more than one attempt. (I tried printing the manual on different computer/printer combinations, including a 486 on a network, with a different set of problems each time.) There were other small problems in going through the manual, which, although they could usually be overcome, were annoying. I contacted the help line number given for the program and, though there were no problems in accessing the help, there were no recommended solutions for the printing difficulties.

In contrast, the scoring assistant program itself was very easy to use. Instructions throughout the data entry sections were clear, and the tutorial provided by the manual was helpful. The calculation of scores and classification were done automatically by the program, and the override was easy to use; these features could save a clinician some time in scoring the WAB. The patient report included three sections which could be individually selected: a patient data report, a summary score sheet, and a graph of the patient's scores in comparison to a selected aphasia type. The patient data report could be limited in its usefulness for most clinicians by the fact that the format could not be changed within the program and used too much space in presenting information; the summary sheet of scores could be more useful, especially as many clinicians do additional testing, so the score sheet could be incorporated into a different format.

Both programs would be most useful in clinical settings which are moving to computerized record-keeping. Usefulness of these programs for keeping specific research data is limited by the fact that entire files have to be exported; nonetheless, the programs do offer researchers/clinicians the opportunity to develop data bases of patients' results. With respect to time-saving for clinicians, the Computerized Boston is not recommended. The WAB Scoring Assistant saves the clinician time for calculation of aphasia and cortical quotients and, possibly, for classification. However, there is the cost of data entry time itself. The extent to which the reporting features could be time-saving is of course dependent on the reporting styles of particular clinics.

Clinical Evaluation of Language Fundamentals - Revised Clinical Assistant (CELF-R CA)

Eleanor Semel, Elisabeth H. Wiig, & Wayne Secord

Cost: $120.00 (US)
Publisher: The Psychological Corporation, Harcourt Brace Jovanovich, Toronto
System Requirements: *IBM:* One disk drive (5 1/4" or 3 1/2", though a hard drive is recommended), 512K RAM, DOS 3.3 or later, and printer (80 column, 10 pitch, parallel or serial, working as LPT1 or PRN); *Apple IIc, IIe or GS:* Two 5 1/4" or one 3 1/2" disk drive (although a hard drive is suggested), 128K RAM, 80 column card, monitor, and printer with appropriate interface card in slot 1
Reviewers: Elizabeth Kay-Raining Bird, and Patricia L. Cleave, School of Human Communication Disorders, Dalhousie University, Halifax, NS

The *Clinical Evaluation of Language Fundamentals - Revised (CELF-R) Clinical Assistant* is a software program designed to score the *CELF-R* and then generate a report based on the results. The manual provided with the program is easy to read and there is a tutorial provided. The program is menu driven and thus is generally easy to use.

When using the *Clinical Assistant*, the clinician has the option of entering the results from the *CELF-R* item by item or as scores for each subtest. When the results are entered for each item, the computer program does an item analysis. In addition, there are various screens that allow the clinician to enter basic identifying information and information about a student's medical, behavioural and educational backgrounds. There are also screens for entering the results from any additional testing which has been completed and recommendations for the student. The program takes all this information and generates a report. There are two types of reports available. The statistical report compares a student's raw scores with norm tables and presents the information in both tables and graphs. The narrative report includes the information from the statistical report and also provides interpretations of the score levels, patterns and deviations. In addition, it includes the information that has been entered in the various screens (e.g., medical, education, recommendations).

In general, clinicians who find the *CELF-R* a useful clinical assessment tool will probably appreciate the capabilities of this program. Its strengths lie in the easily generated, detailed interpretation of the *CELF-R*. Instructions for loading and running the *Clinical Assistant* are easily understood and implemented. The pull-down menus make the program quite user-friendly. Data entry is simple and subsequent statistical comparison to the normative sample is rapidly generated. The tabling and graphing of performance scores using the *Clinical Assistant* goes beyond the informational display capabilities of the *CELF-R*.

The primary concerns we have with the *Clinical Assistant* are three-fold. First, no documentation is provided to substantiate the interpretive decisions of the program. For example, the client presented in the program's tutorial has a composite expressive language standard score of 70 (two standard deviations below the mean) and a receptive language score of 78 (between one and two standard deviations below the mean). The former was classified as a moderate delay, the latter a severe delay. Not only was no explanation given for these severity ratings, the discrepancy between the two ratings implies a real difference in the receptive and expressive composite scores. (This implication is, actually, in contradiction to recommendations provided in the *CELF-R* Examiner's Manual.)

Second, we feel that expanded editing options within the *Clinical Assistant* program are essential. Clinicians will not always agree with the relative emphases placed upon various aspects of the report and the interpretive statements that the program outputs. In particular, the summary of the CELF-R overshadows all other aspects of the report, especially when an item analysis is generated. While we were able to edit files created by the *Clinical Assistant* in *Word Perfect*, formatting was a problem and we could find no way to re-route these files back into the *Clinical Assistant* program.

Third, given recent discussions regarding the limitations of standardized tests (e.g., McCauley & Swisher, 1984), we have some concerns with Appendix A, which lists possible goals for each subtest. Although the program authors state that clinicians should refer to their "expert clinical judgment" (p. 1) when implementing this program, references to Appendix A in the manual seem to guide clinicians to generate specific goals from standardized test performance scores.

Reference

McCauley, R. J., & Swisher, L. (1984). Use and misuse of norm-referenced tests in clinical assessment: A hypothetical case. *Journal of Speech and Hearing Disorders, 49*, 338-348.

Computerized Profiling

Steven H. Long and Marc E. Fey

Cost: $154.50 (US)
Publisher: The Psychological Corporation, Harcourt Brace Jovanovich, Toronto
System Requirements: *Apple Macintosh:* One floppy or hard drive, operating system 6 or 7, 2 MB RAM (4 MB recommended); *IBM*: One floppy or hard drive, DOS 5.0 or higher, 640K RAM
Reviewer: Gary Holdgrafer, Department of Speech Pathology and Audiology, University of Alberta, Edmonton

Computerized Profiling (CP) is a comprehensive package of analysis modules designed to assist speech-language pathologists with language sample analysis.

CORPUS is the module used to create transcript files for all other Computerized Profiling analysis modules. The IBM version includes a utility program for converting CP files to Systematic Analysis of Language Transcript (SALT) format. Conversely, a SALT user can convert a file into a CORPUS file for analysis by any desired CP program. Also, transcripts can be entered into any word processing program that can generate an ASCII file.

One or a combination of analyses can be run, including lexical (PRISM-L, Early Vocabularies), prosodic (PROP), syntactic (LARSP+, DSS), relational semantic

(APRON), pragmatic (CAP), and phonologic (PROPH+) analyses. All programs have easy-to-use print and search functions, enabling the user to choose the desired analyses to be viewed on the screen or printed. I have worked primarily with the phonological, syntactic, and pragmatic analyses modules of CP for research and clinical purposes and found all of them relatively easy to use. It is important to note here that specific modules require competence with particular analyses. For example, the user must be familiar with LARSP, DSS and CAP scoring procedures in order to use those modules. The program will provide an automatic analysis which must be reviewed and edited for accurate tabulation.

CP has undergone a number of revisions over the past several years and an updated version is now being developed which will include the Index of Productive Syntax (IPSYN). This will further complement the already existing comprehensive set of analysis programs. I am currently using the IPSYN to analyze language transcripts and I find this CP module to be a useful research tool with clinical potential. These language transcripts were originally in SALT format so I appreciate the interaction between CP and SALT. The conversion feature of CP allows the researcher or clinician to have access to the analyses offered by both SALT and CP. This option gives the user the opportunity to run other analyses without re-transcribing a language sample and to search across all domains of language.

I find CP to be a valuable tool for both research and clinical purposes. It provides a range of analyses, a number of which I use on a regular basis. It has many features, which I am still discovering, so the manual should be kept within easy reach. I strongly recommend consideration of this software for both clinical and research environments.

Dyslexia Screening Instrument

K. Coon, M. Waguespack, & M. J. Polk

Cost: $58.00 (US)
Publisher: The Psychological Corporation, Harcourt Brace Jovanovich, Toronto
System Requirements: IBM compatible computer with hard drive, one 5 1/2" or 3 1/4" floppy drive, DOS version 3.0 or higher
Reviewer: Hugh W. Catts, University of Kansas, Lawrence, KS

A large body of research and clinical evidence now indicates that developmental dyslexia is often a language-based reading disability (e.g., Kamhi & Catts, 1989; Miles, 1993). As such, speech-language pathologists are frequently involved in the early identification and assessment of dyslexia. Speech-language pathologists in this role may find the *Dyslexia Screening Instrument* of value in their work. This instrument is a software rating scale designed to describe the characteristics associated with dyslexia in students from grades 1 through 12 and to discriminate between those students who display these characteristics and those who do not. This instrument is intended to provide professionals with a starting point for identifying students with dyslexia.

At the heart of the *Dyslexia Screening Instrument* is a rating form comprised of 33 characteristics on which a classroom teacher rates a selected student. Ratings for each characteristic may vary on a five-point scale from "behavior is never exhibited" to "behavior is always exhibited." The results from the rating scale are subsequently entered into the scoring program software where values for individual items are weighed and an overall score is tabulated. This score can than be used to decide if further evaluation to identify a student as dyslexic is warranted.

The 33 characteristics on the rating form were selected on the basis of a literature review, expert evaluation, and discriminant analyses. These characteristics include a full range of academic (e.g., inaccurate oral reading, poor handwriting) and linguistic descriptors (e.g., trouble following directions; cannot recall words, especially names). Strikingly absent from this form, however, is "problems with word attack or decoding skills." The latter is a hallmark of dyslexia (Clark, 1988). Also, the rating form seems to be over-represented with general behavioral characteristics such as "easily distracted", "doesn't anticipate consequences of behavior", or " misplaces and loses personal items." Whereas characteristics such as the latter may describe some dyslexic students, little research is available to support their centrality to the disorder.

The manual describes a series of studies that were conducted to (a) derive the final set of characteristics, (b) establish the criteria for student classification, and (c) evaluate the validity and reliability of the instrument. The methods and analyses of these studies seem appropriate; however, important details are sometimes omitted. For example, in designing the instrument, a sample of dyslexic students was employed. Unfortunately, very few details are provided on the criteria used to select these students. The latter represents a major limitation of the *Dyslexia Screening Instrument.* Schools systems often do not use the diagnostic classification of dyslexia, and if they do, the criteria for diagnosis may vary considerably from one district to another. Therefore, without sufficient details concerning how dyslexic students were selected for the developmental sample, it will be difficult for professionals to fully evaluate the usefulness of the present instrument in their work.

Results from the studies that employed the *Dyslexia Screening Instrument* showed that it discriminated with a high degree of accuracy between the dyslexic and non-dyslexic students in the developmental sample. Subsequent evaluation of the instrument, however, was less promising. For example, the instrument was used to screen all 474 students in an elementary school and 288 students in selected classes of secondary schools. Students who received a failing score and who demonstrated normal cognitive abilities were given a full evaluation for dyslexia. Of the latter subjects, 62 % were diagnosed as dyslexic. This rate of correct identification of dyslexia is rather low. Furthermore, it is hard to fully evaluate without the rate of correct rejection (e.g., those passing the screening instrument and subsequently not identified as dyslexic) which was unavailable.

Despite the limitations reported above, the *Dyslexic Screening Instrument* may serve a useful purpose in the initial stages of identifying dyslexia. The completion of the rating form is quick and unobtrusive and the software scoring program is easy to use. Speech-language pathologists and other professions may find that the results of the *Dyslexic Screening Instrument* can be

helpful (especially when combined with other screening results and observations) in determining which students to refer for a full evaluation of dyslexia.

References

Clark, D. (1988). *Dyslexia: Theory and practice of remedial instruction.* Parkton: MD: York Press.

Kamhi, A. & Catts, H. (1989). *Reading disabilities: A developmental language perspective.* Boston: Allyn & Bacon.

Miles, T.R. (1993). *Dyslexia: The pattern of difficulties.* London: Whurr Publications.

CD-ROM Living Books

Arthur's Teacher Trouble
(M. Brown, 1994)
Ruff's Bone
(E. Noyes, 1994)
The Tortoise and the Hare
(M. Schlichting, M. Dashow & B. Lawrence-Webster, 1994)
Just Grandma and Me
(M. Mayer, 1994)
The New Kid on the Block
(J. Prelutsky, 1994)

Publisher: Random House/Broderbund, Toronto, ON
System Requirements: *Macintosh:* CD-ROM drive, System 6.0.7 or higher, 256 color monitor, 4 MB RAM; *IBM:* MS-DOS 3.3 or higher, Windows 3.1, Super VGA (640x480, 256 colors), Sound Blaster or SB Pro and 100% compatible sound card, mouse, CD-ROM drive.
Cost: $53.95
Reviewer: Lu-Anne McFarlane, Speech Pathology and Audiology, University of Alberta

As computers are increasingly used as tools in intervention, clinicians are faced with the task of selecting software that is entertaining and motivating, as well efficient and focused. In addition to software applications designed specifically for use in communication disorders intervention, clinicians can also access tools designed for general use (Liebert & Martin, 1995). This article will review one such application, *Living Books*. It will describe the CD-ROM format, review 5 of the available titles and suggest uses in speech-language pathology.

Living Books are interactive, animated, CD-ROM format stories for children. They are intended to entertain and assist with reading skills. A variety of stories are available, many of which are familiar from their print version. The stories range in complexity and are suggested for ages 3 through 12, depending on the title selected. Most of the CD-ROM titles can be played in English and Spanish and one of the titles reviewed, *Just Grandma and Me*, can be played in Japanese. An English copy of the print version of each story is included.

Each Living Book begins with the main character introducing the story and offering options for use: a) "Read to me" or b) "Let me play". Selection of the former results in a presentation of the story, in a succession of computer images. Each page of the story includes the text, which is highlighted as it is read. The pictures are animated, with the characters moving through some of the actions described. Selection of the second option "Let me play" results in each page of the story being read as before. Once the text from each page has been read, the child can move the mouse to point on any of the text or objects in the picture. A simple click of the mouse creates comical and often unexpected actions. Words or sentences can be highlighted for the computer to read aloud. The user can exit the page at any point and skip back or ahead in the story.

Living Books are a colorful, dynamic alternative to print story books. The graphics and animation are excellent. Quality of the audio is also excellent; the story is read at a nice pace, and the characters have interesting voices. *Living Books* has received glowing reviews in major computing magazines and has received 12 major awards. The creators have made it extremely user friendly, operated entirely through point and click use of the mouse. The product has been used independently by children as young as four in the author's clinical setting. All print instructions on the screen are supplemented by pictographs (e.g., a nodding head for yes) or the instructions are explained by the story character ("If you'd like to play in the story, click here"). The interactive nature of the stories will keep children and adults alike captivated.

A description of one page of the story *Arthur's Teacher Trouble* will provide a feel for the humor and interest level of the materials. Arthur has returned home from his first day at school with the dreaded Mr. Ratburn as his teacher. He's loaded down with homework and doesn't even have time to eat freshly baked chocolate chip cookies. The computer screen displays Arthur and his mom in the kitchen. Once the text for the page has been read, the child can click on any of the objects in the kitchen. One click on the blender and it whizzes and whirls and sucks up the plant next to it. A click on the tray of cookies and they sit up, open their eyes and sing a song while dancing. Other kitchen surprises include dancing flour cans, blooming flowers, monsters in cupboards and annoying little sisters. A few of the surprises have humor intended for parents or teachers, such as a spinning globe playing the theme music for "As the World Turns".

There is no doubt that *Living Books* are an exceptional example of the possibilities for multimedia computer applications. They succeed as educational entertainment for children and verbal presentation of the text accompanied by highlighting the written text may assist with word recognition. Although not designed as an intervention tool, the programs can be adapted for the remediation of receptive and expressive language delays. The following section will describe some of the possible uses in speech and language intervention programs.

Suggestions for use in speech-language pathology. The most obvious use of *Living Books* is for narrative intervention. *Living Books* provide an alternative to print books for intervention focused on narrative development. The books can be presented as a receptive, awareness task with the interactive component as a motivator at the end of each page. The child can also be given the opportunity to re-tell the narrative once it is familiar. This is accomplished by simply turning off the sound, leaving the child to tell the story. Books can be selected to highlight specific aspects of story grammar for the child to learn.

There are several structures which can be targeted in any of the *Living Books*, allowing them to be used for a wide range of speech and language goals through reciprocal book reading (Kirchner, 1991). All lend themselves well to use of language in past, present and future tense. The clinician can ask what the characters are

doing, what will happen when an object is clicked on or what did happen, after an object is clicked on. All the books are useful for goals of predicting events, both the events in the story and the actions of the object when they are selected. Auditory memory and comprehension can also be targeted by asking for recall of story elements. Articulation can be targeted at the level of connected speech by have the client tell or read one of the stories. In addition to these general intervention targets, specific goals for each reviewed title are presented below.

Arthur's Teacher Trouble. This story presents a complex narrative structure best suited to elementary-school children with good narrative skills. It features lots of dialogue between the characters, so would be ideally suited for the client learning to include dialogue in the narrative. It includes story grammar elements in several episodes within the story. Each episode could be targeted separately to simplify the narrative and then strung together to create a complex episode. The structure of the narrative highlights the story grammar elements of response and reaction.

Ruff's Bone. This simple narrative, recommended for ages 3 to 8, follows one dog as he searches for his bone. It is ideally suited to highlight the connection between the story grammar elements of initiating event and consequence. As each page takes place in a different location, it can also be used to highlight setting. Prediction of events would also be an ideal target as the story has lots of options for alternate events. Development of 1st person pronoun use can be facilitated as the book contains multiple examples of the pronouns I, me and my, used contrastively. The main character "Ruff" and the frequency of 'r' words in the text also make it a good selection for articulation remediation.

Just Grandma and Me. The classic tale by Mayer is best suited to younger children (recommended ages, 3 to 8). The story follows the mishaps and adventures of a boy and his grandma at the beach. The narrative has a predictable sentence structure which is well suited to training additive (and), causal (so) and adversative (but) connectives. It contains many instances of initiating events and consequences. Although reactions of the character are not explicitly referred to, this story grammar element could easily be incorporated into the narrative, as the actions of the character lead to predictable and obvious internal responses and reactions. The story contains many instances of the pronoun 'I', so would be useful for intervention focusing on this target.

The Tortoise and the Hare. Aesop's well known fable comes to life as a *Living Books* narrative. The illustrations contain enough detail to provide excellent visual support. The story is filled with dialogue between the tortoise and the hare, so would lend itself well to re-tell by two clients. As reference to the two main characters alternates frequently throughout the story, this narrative is ideal for teaching adequate referring expressions to assist with narrative cohesion. The story follows one goal throughout, providing lots of description between the initiating event and the consequence. Thus, it would be a good vehicle for encouraging longer and more descriptive narratives. Finally, the narrative can be used to encourage varied and interesting vocabulary.

The New Kid on the Block. The *Living Books* version of *The New Kid on the Block* is a selection of poetry from the original title. Prelutsky's poetry for children is whimsical and humorous. The natural rhythm in poetry makes it an excellent vehicle for fluency intervention. Individual poems can be selected to highlight specific articulation targets (velars in *The New Kid on the Block*; /s/ clusters in *My Dog, He is an Ugly Dog*; and fricatives in *My Sister is a Sissy*). Poetry can also be used to facilitate acquisition of phonemic awareness, specifically rhyme and alliteration (Bryant, MacLean & Crossland, 1989; Catts, 1991; Dowker, 1989).

These suggestions highlight the potential value of *Living Books* as an intervention tool in speech-language pathology. Thoughtful selection and use of specific titles can result in efficient, focused intervention that is also entertaining and motivating.

References

Bryant, P., MacLean, M., & Crossland, J. (1990). Rhyme and alliteration, phoneme detection, and learning to read. *Developmental Psycholinguistics, 11*, 237 - 252.

Catts, H. (1991). Facilitating phonological awareness: Role of speech-language pathologists. *Language, Speech, and Hearing Services in Schools, 22*, 196 - 203.

Dowker, A. (1989). Rhyme and alliteration in poems elicited from young children. *Journal of Child Language, 16*, 181 - 202.

Kirchner, D. (1991). Reciprocal book reading: A discourse-based intervention strategy for the child with atypical language development. In Gallagher, T. (Ed.), *Pragmatics of language: Clinical practice issues.* San Diego, CA: Singular Publishing Group.

Liebert, A. & Martin, D. (1995). Authoring and hypermedia. *Language, Speech, and Hearing Services in Schools, 26*, 241 - 247.

Board Maker

Dennis King

Cost: $399.00 - Site License for 5 users $1000.00
Publisher: Mayer-Johnson Co., PO Box 1579, Solana Beach, CA 92075
System Requirements: Apple Macintosh computer with 2 megabytes of RAM, 6 megabytes of free disk space, printer
Reviewer: Ed Rodgers, Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, AB

This program is a graphics storage program. Symbols from the Picture Communication Symbol libraries (PCS) are stored in bitmapped clip art style format. These images or symbols are stored with 10 different languages associated with the image and the program permits user-created images to be stored into BoardMaker for later use. This software gives the user a standardized image set to be used for creation of augmentative communication boards. The program is intended to be used in conjunction with a graphics program. The BoardMaker program stores the images and then your favorite graphics package can be used to create your presentation.

Applications include making pictures for overlays and displays for augmentative communication, for flyers, cards, banners, or stories. It dovetails nicely with Speaking Dynamically, another Mayer-Johnson product for speech output in augmentative communication (also reviewed in this

issue). It can be used with any client requiring picture symbols to communicate thoughts.

The program launches into a page that is divided into two areas. The left side is the graphic and the right side of the window permits the user to alter the language(s), fontsize(s), and picture size. Since the PCS has 3000 or so images, the user has an area in the right side of the window to search for or browse the various books in the library of symbols.

The quality of the images are excellent. The program is very user-friendly and this is due to its great organization. Anyone having to create resources for the speech impaired disabled person should not be without this library of images.

Screen Doors

Madenta Communications, Inc.

Publisher: Madenta Communications, Inc., 9411A - 20 Ave., Edmonton, AB T6N 1E5
Cost: $385.00 (US)
System Requirements: Any 68020 or later Macintosh computer, 4 Megabytes of RAM (8 recommended), System 7.1 or higher.
Reviewer: Ed Rodgers, Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, AB

Many disabled users can not access the computer with the standard input devices. This software allows users with limited ROM to perform the usual tasks associated with standard keyboards. The program is a predictive on-screen keyboard emulation. It is designed to act in the same manner as any physical Macintosh keyboard and more. The on-screen keyboards can be configured in many languages and layouts. Word prediction is incorporated to complete writing tasks of all sizes with quickness, ease, and accuracy. This program runs simultaneously with any word processor, graphics package, or any other application.

The program launches into an on-screen keyboard. This means that the disabled user has access at time of launching. The keyboard configuration (layout, size, location, etc.) can be saved so that customized keyboards are available at startup.

Configurablility is the key to this program. The "Editor" provides the method of accessing all default settings and options. This window contains "Topics", "Words predicted", "Next Words predicted", and the appropriate buttons used to change these items (Add, Delete, Rename, and Options). The Editor and Doors II menu bar appear when Doors II is the active application (ie. the window is in foreground). The Editor can be hidden by selecting Hide Editor under the Edit menu.

The Editor is the heart of the word prediction technology. Topics or scenarios can be created or imported. This allows categorization as well as add weighting to the collection of words so that the predictor gives priority to it.

Doors II gives a wide variety of options for customization. Options include: Predictor, Hot Keys, Speech, Keyboards, Arrange, Import, Export, and Reports. These are found under the Settings Menu.

The Arrange option lets the user set up the keyboard and prediction list layout. The prediction list is the set of words that are being made available to the user for selection based on the keystrokes pressed. This list can be placed in four different locations around the keyboard.

Keyboard options control the palette (on-screen keyboard and prediction list) and overall look of the keys. Graphical symbols reflecting regular Macintosh keyboard symbols are available through these options as well as the size, color, and 3-D look to the keys. Various languages are supported by Doors II making the keyboard reflect the symbols in that language. The Layout of the keyboard is alterable and Madenta will provide any other alternative layout that the user may require.

Predictor options deal with word list visibility, prediction of next word, capitalization of new sentences and addition of spaces after the sentence punctuation. Abbreviation expansion has been included in this version which gives the user the ability to type a user-defined sequence of letters that are expanded to the full word, sentence, or paragraph.

Hot Keys gives the user the additional acceleration technique of the macro. A single key stroke or key combination can replace numerous clicks or keystrokes. The keypad and keyboard number keys as well as the function keys and the command-key and the function keys are the four groups of keys able to set up.

Speech output is accomplished with the use of Apple's PlainTalk technology. In order to use speech synthesis, you must have System 7 or higher with Apple's PlainTalk technology. It is included with Madenta's product. The user is able to pick the voice, volume, pitch, speed, and emphasis of speech. It is possible for the predicted list to be spoken.

The Import feature permits a text file to be loaded into a dictionary automatically learning the words, next possible words, and frequency. Of course exporting does the reverse.

Reports are possible to be created via the Reports option. Usage statistics, dictionary information, system information, and System Folder listing is possible. Even a problem report can be generated to send to the company!

This is the second version of the product and shows many enhanced features. The quality of the program is excellent. User-customization, a very important issue in software design, is prevalent throughout. Documentation is excellent with examples and tutorial exercises throughout. It is actually a total revamp of the old program but the major features are there and improvements are plenty.

The software is essential for users that are physically limited from accessing standard keyboards. In conjunction with head pointing input devices, this becomes the user's access system to the microcomputer.

Speaking Dynamically

Dennis King

Cost: $299.00; Site License for 5 users $1000.00
Publisher: Mayer-Johnson Co., PO Box 1579, Solana Beach, CA 92075, USA
System Requirements: Macintosh LC or higher computer, 4 Megabytes of RAM, System 7 or higher, 6 megabytes of free disk space, printer.

Reviewer: Ed Rodgers, Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, AB

This program is used to augment communication by producing speech output. Its strength lies in the ability to design communication boards on-screen. These "boards" have clickable "buttons" allowing users to "press" a button to communicate their thoughts audibly. Messages, stories, and/or lesson plans are able to be created and stored. Any mouse emulating device (trackball, joystick, touch-screen, position-sensing headset or single switch) can be used to access the "boards". Selecting a picture symbol can make the computer talk, type, play a recorded message, change to another board, or do several of the actions at one time. Symbols from the Picture Communication Symbol libraries (PCS) can be used for the images on buttons. BoardMaker (also reviewed in this issue) would make good "companion" software for this product. This software takes advantage of the investment in hardware without additional peripherals being needed to generate speech. No add-on "voice boxes" are required.

One function that computer technology has addressed for the disabled user is that of speech output. This program permits the user to create communication boards for speech and educational purposes. It could be used at any level. It could be used as a portable speech communication for an individual, a speech output for special needs students included in the regular classroom, an assessment tool for evaluating the best method of access, a tool for training scanning techniques and switch use, a tool for symbol training, a tool for practicing the skills of making phrases and sentences, and a way of developing literacy using word prediction and abbreviation expansion capabilities.

The program launches into a screen of color "buttons" that form a communication "board". These buttons are spoken as the cursor is moved over them. The user can then click on these buttons or client-created buttons to take them to other pre-made or client-created communication "boards".

Two modes of operation exist: "use" mode and "design" mode. The use mode would be where the client or end user would probably spend the majority of time. This mode provides users with the "boards" to generate speech. This mode also provides the user with "on-the-fly" capabilities of expression so that they can type words or sentences that are not associated with buttons.

The "design" mode is used to create or modify button and boards and the actions associated with those buttons. Words are assigned to buttons and images are pasted on buttons in this mode. This mode could be used by clients to create their own conversation pieces and in fact should be used in this manner. This contributes to the customization of the software.

A preferences menu allows the designer to customize such things as button size, board location on screen, speaker volume, voice choice, access method (direct select, scanning, etc.), keyboard and mouse response, acceleration techniques (word prediction, abbreviation expansion) and even restriction of the user to the Speaking Dynamically window (so that the user does not inadvertently exit the program).

The action menu lets the user assign actions to the button. A button can have an action attached that speaks a word or words when activated. Another action could be the entry of a message in the message window when the button is activated. Yet another action could be the playing of a recorded message or jumping to another board filled with buttons. A special action can be created for a button as well. These special actions can be editing (cut, copy, paste, select all), moving within text (left one character, right one word, beginning, end), manipulating the Message Display, turning the volume up or down, and even shutting down the microcomputer.

The quality of the program is excellent. Color is incorporated into the board displays which make for nice images. User-customization, a very important issue in software design, is prevalent throughout. Documentation is excellent with examples and tutorials.

Most dedicated speech output devices permit the user to create buttons that produce speech output. Many also give the user the ability to create sequences of buttons. They however are usually quite inflexible. Most use a grid of mechanical buttons and mask them with overlays that assign images over the mechanical buttons. These overlays become cumbersome to transport and clumsy to manipulate, and require multiple layer buttons programmed to move gracefully from one level to another. Because Speaking Dynamically runs on the microcomputer, changing of overlays is not necessary. Screen after screen is electronically brought to the foreground for easy navigation and the resultant communication. The design of communication boards and actions that happen when a symbol is selected make for a talking dynamic display.

Mind Benders Puzzles A1

A. Hardanck and B. Boering

Cost: $60.00 (US)
Publisher: Critical Thinking Press and Software, PO Box 448, Pacific Grove, CA 93950-0448, USA
System Requirements: *Apple Macintosh:* System 6.7 or later, 300K hard disk space, 1 MB RAM; *IBM:* DOS 3.3 or later, 512K RAM, EGA monitor, 300K hard disk space
Reviewers: Dick Sobsey and Rauno Parrila, University of Alberta, Edmonton

Mind Benders Software programs are computer games that were developed to teach deductive problem-solving skills. Mind Benders A1, the game we examined, is comprised of 14 puzzles that require deductive reasoning. Players attempt to solve problems using a information provided as text. The text "clues" contain essential information for solving the puzzles; without using the clues, the player can only guess. For example, one puzzle gives the names of four newspapers and the names of four individuals who deliver them. Clues allow some combinations to be eliminated and others to be confirmed. The program provides charts that players use by filling in true or false in each box. As the chart fills, it becomes possible to confirm or eliminate additional information. A correct solution to a puzzle results in some flashing graphics and praise in the form of screen text. In addition, players who have solved the puzzle can request details of the solution from the program and get a brief explanation. As the program is opened, the

user must select whether correct solutions can be viewed upon request or whether they are remain unavailable until the puzzle is solved by the player.

The A1 series is intended for Grade 2 through adult players at the beginning level. All of the charts in this program are 3 by 3 or 4 by 4 matrices. A second beginners program, Mind Benders A2, is also available in addition to two intermediate level programs (B1 and B2) and one advanced level program (C1). The publisher, Critical Thinking Press and Software, also sells 12 Mind Bender Books with similar puzzles. In addition to trying working out the A1 puzzles ourselves, we had a 10-year-old who had just completed grade 5 try the program.

While presenting these puzzles by computer offered some advantage over a paper and pencil version, this program made minimal use of the computer's capabilities. The puzzles did not appear to be sequenced by difficulty, and once the general algorithm was established, solving the remaining puzzles was routine. Our ten-year-old participant solved all 14 puzzles correctly in less than 35 minutes and rated the play value as low. It actually took her longer to figure out how to operate the program from the minimal instructions that were provided than it did to solve any of the puzzles. The program functioned as intended without problems or errors.

In addition to providing less than adequate instructions, other cardinal rules of computer assisted instruction were ignored or violated. The charts provided did not label items fully, requiring frequent detours to a previous screen to check the abbreviations of names and other critical information. Problems are presented with incomplete information to determine solutions. Clues that are actually essential parts of the problem must be accessed by more detours. All critical information should be on the screen at the same time. The "detailed solutions" provided are very brief and do not explain some critical elements of the logic required. They are adequate for those who have already reasoned out the correct solution, but would probably be inadequate for someone who has not already figured out the answer.

In addition to deductive reasoning, players also need some general knowledge relevant to the content of these puzzles. The logic used to solve these problems often requires assumptions about gender. The player must rule out the possibility that someone named Nelson could be a girl or that someone named Alicia could be a "waiter" to solve the puzzles. In addition to offending those concerned about gender stereotyping, this would create difficulties for any potential players without adequate immersion in our culture to assume an individual's gender from his or her first name.

Mind Benders may be of some value in teaching formal deductive skills, but the artificial nature of the puzzles suggests that their would be little practical application to real life. The most important knowledge about the application of matrix charts to solving problems is probably in recognizing when to apply the strategy and learning to formulate and construct the charts. Unfortunately, since this program provides only matrix problems making it unnecessary to determine when this strategy would be useful and uses prefabricated charts making their construction unnecessary, it offers little toward learning these skills. Since the program does not take advantage of the capabilities of the computer interface and the print materials are available at a much lower price ($6.95 US), we do not recommend the purchase of this program.

ThinkAnalogy Puzzles A1

M.O. Baker, G. Dietrich, and E. Thornton

Cost: $60.00 (US)
Publisher: Critical Thinking Press and Software, PO Box 448, Pacific Grove, CA 93950-0448, USA
System Requirements: *Apple Macintosh:* System 6.7 or later, 420K hard disk space, 512K RAM; *IBM:* DOS 3.3 or later, EGA monitor, 512K RAM
Reviewers: Dick Sobsey and Norma Nocente, University of Alberta

ThinkAnalogy Puzzles is a computer game that is intended to help build vocabularies and enhance logical thinking of the people who play it. Players score points by matching pairs of words that have similar relationships and then classifying the relationships (e.g., an antonym, synonym, kind of, part of) correctly. To maximize points, players must identify the best of several possible analogies. For example, if the player identifies "spruce" as a kind of "tree" to go with "owl" as a kind of "bird," the player gets some points but not as many as if they had chosen "flying fox" as a kind of "bat," a better match for the "owl-bird" analogy according to the authors.

It is designed for players with verbal skills between the grade 3 and grade 6 levels. Two other programs in the series, ThinkAnalogy Puzzles B1 and C1, are designed for grade 4-7 and grade 7 through adult levels respectively. The B1 and C1 programs are identical to the A1 program reviewed here except for language level.

ThinkAnalogy A1 consists 16 puzzles. Each puzzle is made up of a five-by-six-cell matrix. Each cell contains a pair of words. The player selects any word pair or cell and then must select the cell that best matches. Then the player makes another selection to classify the analogy. If both are correct, the player receives 100 points. If the match or the classification are incorrect, points are deducted. The player loses 10 points for incorrect classification of the analogy, and 10 points for a correct analogy that is not the best possible analogy. Incorrect analogies lose 30 points. A perfect score of 1500 indicates that every word pair is properly matched and every analogy in the puzzle has been properly classified. The program contains a dictionary feature. Players can look up words if they do not know the definitions. It is primarily through the use of the dictionary feature that learning is expected to take place. The definitions in the dictionary are not comprehensive but they focus on the features that are essential to the correct analogies.

The program was easy to use and did what it was supposed to do without errors. As part of the review process, we presented the program to a ten-year-old grade five student and several adults with post-graduate degrees including some with English as a second language. All of these participants obtained near-perfect scores, but all made some errors.

There was little indication that the errors helped to discriminate the language levels of the players or that they were learning as a result of playing the game.

Often, they were unable to determine why the analogy that they chose was inferior to the correct response. Using the "spruce to tree," "owl to bird," and "flying-fox to bat" analogy cited above, for example, there are many dimensions of these relationships that might be considered. Since they are all "kind-of" relationships, there may not be one right answer. Is the critical attribute flying (shared by owls and flying foxes) or being common in temperate woodlands (shared by owls and spruces)? If one is not clearly better than the other, scoring one more highly is arbitrary; if one is clearly better, the player has no opportunity to learn why it is better from the feedback provided.

ThinkAnalogy Puzzles is basically a text-based computer-assisted learning program. It does not use the graphic interface of contemporary computers to the best advantage for learning or entertainment. Scanning through the Critical Thinking Press & Software catalog suggests that many of the other software packages that they produce use the computer's graphic interface to better advantage.

There is no obvious progression of the puzzles from simple to more difficult material and certainly no capacity for the program to present easier or harder material based on student progress. In fact, within puzzles, the task becomes easier as the game progresses because the number of word pairs to chose from becomes smaller as previous correct matches are eliminated. These same puzzles could be presented as paper-and-pencil exercises with few disadvantages. Our ten-year-old participant completed most of the puzzles quickly and with very few errors, but rated the play value as poor and was not interested in continuing when given the opportunity to quit. Considering these limitations, the $60 (US) price tag is high, especially for users who might require three programs for use with clients at different levels. The small size of the programs suggest that all three could have been combined easily to offered on a single disk as one program with three levels.

ThinkAnalogies programs have limited application to people with specific language disorders. The task of identifying and classifying analogies is one that has little practical application to everyday life. Its application appears to be limited to people who require practice doing analogies. This might include some people with brain injuries that result in mild difficulty in identifying relationshps in addition to those preparing for language-based aptitude tests such as the Miller's Analogies Test. Some students of English as a second language may find the program helpful to refine their definitions of common words.