

Materials Review / Évaluation des matériaux



The Processing Program: Using Language Webs and Altered Auditory Input to Improve Comprehension (2000)

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The *Processing Program* consists of a set of picture-identification tasks designed to improve children's language processing skills. Specifically, the program aims to facilitate processing of linguistic concepts (i.e., nouns, singular/plural noun inflection, and concepts of time, condition, quantity, and quality), facilitate processing of linguistic concepts in increasingly longer and more complex sentences, help children achieve success in following directions, provide a technique to improve processing speed and efficiency, provide communication partners with a technique to help the child learn outside the intervention setting, and finally to provide a link from oral to written literacy. The program is intended to be used with children who have mild, moderate, severe, or profound difficulties in processing or learning language.

The program has three levels: Level 1 targets 39 primary concepts for three- to six-year-old children; Level 2 targets 35 advanced concepts for six- to nine-year-olds; and Level 3 targets 74 upper extension concepts for nine- to twelve-year-olds. Two features are central to the program: Language Webs and the Altered Au-

ditory Input (AAI) technique. The Language Webs arrange target concepts in frameworks and are introduced incrementally within the program such that each new concept is combined with previously presented concepts to form longer and more complex directions. The AAI technique is used to modify the speed, pattern of pausing, and prosody with which picture-pointing directions are presented to a child when a new concept is being targeted and is gradually faded as accuracy improves.

The author states that *The Processing Program* is founded on strategies gained from her own clinical experience working with children with language processing problems and on recent research in auditory processing disorders. The Language Webs that make up the program are based on ideas about the benefits of incremental learning and redundancy. The author cites Porch's concept of teaching "at the fulcrum" and research on the neurophysical changes that occur with multiple experiences of direct intensive training over time as being major considerations in the design of the program. She notes that the idea of altering the auditory input to the child (via the AAI technique) arose in part from Tallal's reports of the beneficial effects of presenting children with language-learning disorders with speech in which formant transitions were synthetically lengthened. The AAI technique is also based on the work of Ellis Weismer and others who have examined the effect of varying rate and prosody in natural speech on children's word learning. The author states that unlike other programs that

are designed to alter auditory input and are computer-based (e.g., Earobics, Fast ForWord), the AAI technique used in *The Processing Program* modifies natural speech input and, thus, can be used in face-to-face communication contexts and taught to all of the child's communication partners.

The *Processing Program* consists of two manuals, one for Level 1 and another for Levels 2 and 3. Each manual is composed of two sections, an introduction and the Picture Plates with accompanying commands. The introduction includes an overview of the program, a description of the intended users, a list of program goals, a description of both the Language Webs and AAI technique, general information on auditory processing and language disorders, including a rationale for the author's approach to intervention, and specific program instructions. The concepts and vocabulary comprising each program level and sublevel are listed in tables for easy reference. Four appendices contain a reference sheet of simple instructions for using the AAI technique, a Family Letter that can be reproduced for indicating the appropriate length of commands and AAI technique to use at home, a form for monitoring progress, and finally, a presentation of program outcomes in the form of anecdotal observations and standardized test data for one case study.

The Picture Plates are organized into levels and sublevels. Level 1 (Primary concepts) contains 70 picture plates; Level 2 (Advanced concepts) contains 56 plates; and, Level 3 (Up-

per Extension concepts) includes 18 plates. Sublevels within each level have a different set of picture plates (two to six plates per sublevel) and accompanying commands. Each plate has 4 to 20 colour illustrations. Commands for each plate are printed on the back of the prior plate so that they are visible to the professional when the book is open on a table. Level 3 of the program includes a set of written commands that can be duplicated, cut apart, and used with or instead of the spoken commands

The Processing Program is intended to be used in combination with other language processing and intervention activities. The author suggests that it may best be used at the beginning of a therapy session as a warm-up activity and "mini" diagnostic tool to measure the child's progress from session-to-session. The activities within the program are picture-identification tasks. The clinician presents a command to the child, and the child touches the corresponding picture to execute the command. Prior to beginning the program, the clinician determines the appropriate beginning level and sublevel of instruction using guidelines provided in the manual. After determining the starting point, the clinician establishes the parameters of the AAI technique to modify (i.e., either slow rate, slow rate and pausing, or slow rate and pausing and prosodic alterations) again using instructions provided in the manual. Criterion levels outlined in the manual are used to determine when use of the AAI technique should be faded and

when the child should progress to a new sublevel of the program.

The author provides anecdotal evidence for improvements in receptive language (e.g., responding appropriately to questions, receptive vocabulary), expressive language (e.g., intelligibility of single words, mean length of utterances), and associated behaviours (e.g., appropriate eye contact) for children participating in *The Processing Program*. She notes that more rapid improvement occurs when the AAI technique is used daily by a child's communication partners. As the author notes, formal clinical research on the efficacy of *The Processing Program* has yet to be completed.

One strength of the program is its highly structured nature. Concepts and vocabulary have been carefully sequenced from simple to more difficult and divided into levels and sublevels with each new step building on what was learned at the previous step. As well, the program incorporates a wide variety of language concepts and vocabulary. Another strength of the program is its potential utility with the broad population of children with language processing difficulties that often comprise the caseload of a speech-language pathologist. Children from 3 to 12 years with subtle to significant language processing difficulties that may be related to developmental delays, language disorders, head injury, hearing loss, etc., may all be served by this program.

The manuals themselves are well organized and the instructions for using the program are adequate. The picture plates contained in the manuals are clearly labelled so that it is easy to recognize what level and sublevel to which each plate belongs. The colour pictures would be engaging to children and could also be used independently by the clinician desiring more flexibility. The number of parameters to consider may make the program challenging to implement for the first-time user. However, the progress sheet provides a useful means of keeping track of sublevels, target concepts, AAI parameters, and the child's success, and the clinician's comfort with the program would surely increase with use. As such, *The Processing Program* is an intervention program that would be useful for clinicians desiring a structured approach to working with children with language processing difficulties.

In summary, *The Processing Program* is a well-designed program for facilitating language processing skills which has roots in recent research. The author has integrated several facets of research in the area of language processing disorders into her program. She summarizes this research well and provides the reader with a clear explanation of how it influenced the design of the program. The inclusion of a reference list in the manual will permit users of the program to carefully gather and examine the earlier research on which the program is founded and weigh the merits of the program themselves.

