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Title: Occupational Hearing Conservation Management on the Kaypro 10 and IBM-PC/XT ("OHC-K")

Author: Harvey J. Gardner

Cost: \$995.00 [IBM-PC owners must purchase dBase II, version 2.4 (Ashton-Tate)] Telephone support and upgrades for 90 days included in purchase price. Additional telephone support is \$300 for 90 days, upgrades are \$30, and major revisions are \$250.

Hardware: Kaypro 10, IBM-PC/XT, or IBM-PC with one floppy disk drive and a hard disk drive. Compatible dot matrix printers include C. Itoh Prowriter; Epson series MX, LX, RX, and FX; Okidata series 80 and 90; and Tandy DMP.

Order From: Huntington Hearing & Speech Center
44 Elm Street
Huntington, L.I., New York 11743

Reviewers: David J. Thompson and Michael J. M. Raffin
Audiology Section, Dorn Veterans' Hospital
Columbia, South Carolina

Description

The software was provided on a 5¼" floppy disk. We tested it on an IBM-PC with two 5¼" floppy disk drives, 256 Kbytes of RAM, a hard disk drive (Tecmar 40310), and a line printer (Okidata 92P).

OHC-K is a data base for records management in a hearing conservation program. It is written in dBase II, the first data base software used widely for microcomputers. Data for a subject ("employee") are a hearing health history and a test record consisting of thresholds for air-conducted pure tones and related information.

The main menu of the program has two sections. One section contains commands for entering, changing or deleting the history or the test record data. The other section has options for disk-based operations, error checks and updating of test data, printing, and exit to the disk operating system (DOS). Specific options in the main menu include: formatting a floppy disk, entering the hearing health history and the test record into separate data base files, changing the stored history or test data, an error check for audiometric data, updating new test records, automated segregation of test record files into separate formats for company or employee prior to printing, generation of reports to a line printer, copying of files between floppy disk and hard disk, and exit to the command mode of dBase II.

Critique

The software loaded quickly from hard disk, displaying the menu on the monochrome monitor in a few seconds. The first problem was failure of the command "format a floppy disk." A dBase II error message appeared on the screen followed by a return to DOS. However, when a pre-formatted disk was placed in the drive the program executed the next command sequence, "initialize disk," by setting up several data base files for a specific company. A distracting aspect of the documentation here was the format of directions for using the two computers, which alternated between the Kaypro and the IBM-PC for each segment of information.

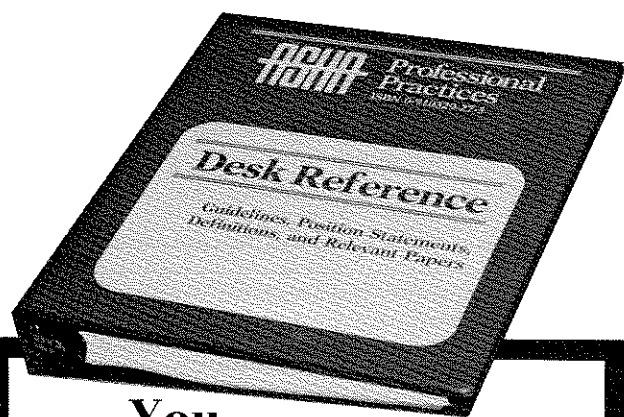
Directions were clear for keyboard entry of the hearing health history and the test record data. A nice feature of entering pure tone thresholds into the test record was that only numbers could be entered—a useful aid incorporated inconsistently elsewhere in the program. Most input fields accepted characters and numbers. One field ("tester") documented to accept either characters or numbers accepted only numbers. Other options for records included "delete/change," "Update," "error check," and copying of records (both directions) between hard disk and floppy disk. In "delete/change," an employee's test records were brought to the screen for editing by giving the last name or the social security

number. This process could be tedious, however, since it was necessary to go through the employee's records in order of date to reach a specific record. "Update" checked dates on an employee's test records and tagged the original record ("baseline"), the most recent record ("current"), and the record preceding the most recent record ("previous"). "Error check" inspected pure tone thresholds to insure that each entry ended in a "0" or "5" and was within the range of "–10 to 130." Copying records between hard disk and floppy disk was reliable. The documentation stressed the need for making back-up copies of floppy disks immediately—good advice for new computer users. Problems we encountered with data entry and manipulation could be corrected by:

- expanding and separating the documentation on the program for an IBM-PC,
- explaining the use of PC-DOS to create a master director for convenient storage of OHC-K with dBASE II,
- inhibiting the multiple beeps that occur every time the system completes a task,
- allowing entry of either numbers or characters into fields as appropriate,
- advising the user to turn on the "Number Lock" key for the numerical key pad of an IBM-PC before entering pure tone thresholds,
- removing the slashes in fields for dates so the user can insert slashes or hyphens with the date (m/d/y or m-d-y),
- combining the "comment" and "action" fields in the test record,
- improving the "error check" routine by placing the cursor at the locations of errors rather than the beginning of the test record,
- broadening the "delete/change" routine to permit retrieval of specific test records, and
- allowing alterations made in the hearing health history (example, the social security number) to be entered automatically in the test records.

Segregation of data and listings to the line printer were handled by submenus. In addition to printing screen images of the hearing health histories and the test records, options were available to group, classify or summarize test record data before printing. These options included a summary of the most recent audiometric data for all employees, a comparison of current audiometric data with the most recent and the base-line data, a one-page summary of audiometric data for all employees, appropriate letters to employees, and a list of employees with significant threshold shifts. The comparison of current data to previous or base-line data included information abstracted from test records plus a computation of percent hearing loss. The one-page summary allocated employees to categories of audiometric configuration, explained the codes used to classify hearing sensitivity, and identified employees whose hearing status had changed since the last summary report. There was also a menu for printing mailing labels from a separate data base file. The documentation for these procedures was easy to follow and examples of print-outs were in the appendices. Our suggestions for improvements in the data summary/report generation portion of the software are: any option entered by mistake should be exited through the Escape key, an option should be available for alteration of computations by the user (example, calculation of percent hearing loss), a "print to screen" option should be included for review of summaries and related data without the necessity of printing, the printer should be adjusted for the user by the software before and after printing, and the data base of company addresses for mailing labels should be accessible from the main menu so it doesn't have to be created twice.

The documentation also included a short guide on troubleshooting. The guide told us how to get back to the main menu if an option was chosen by mistake. Two of the options didn't work as documented. If we entered the "error check" routine



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by mistake, we had to hit the Escape key and type "do menu" in order to return to the main menu in dBase II. If we entered the "generate report" submenu by mistake, we could not return to the main menu by typing a string of "8's" because "8" was a new print option that was not documented.

Summary of Ratings

Program Description: Above average. Documentation is generally easy to follow. Hardware requirements should list the amount of RAM necessary for running the program. The author's liberal use of humor in the documentation sometimes distracts the reader from the task.

Program Effectiveness: Above average. The software generally works as documented, although the problem with the disk formatting option must be corrected. The logo and address at the top of reports and letters had misplaced lines and letters, but this may have been due to differences between the ROM software in our line printer (Okidata 92P) and the one supported by the author (Okidata 92).

User Friendliness: Average. The program is convenient to enter or exit and the instructions, menus, input responses, and data outputs were not difficult to follow. However, the positive impact of these features is diminished significantly by the problems listed in critique. The program does not allow the user to recover quickly from mistakes, which causes extra work.

Support Documentation: Average. The documentation is fairly complete and well organized. Back-up copies of the floppy disk appear to be reliable. The appendices provide sample data for learning the system, examples of all printed material, and information on software support, upgrades, and a newsletter. There is no statement on return of the software for refund. We think the cost of the software, upgrades, and additional support is quite high.

Overall Rating: Average. Users familiar with complex "applications" software such as data base or spread sheets will be able to use this software package, but we predict a significant measure of disappointment. Those who have used dBase II are likely to expand or modify sections of the program. On the other hand, managers of hearing conservation programs may wish to try their hand at creating their own data base system. If time is not a critical factor, the task could be done with dBase II or similar software such as dBase III (Ashton-Tate), Framework (Ashton-Tate) or Symphony (Lotus).

Publisher's Response

I am grateful to the two reviewers for their scholarly and thoughtful critique which has inspired the implementation of numerous changes including a price reduction (now, \$695), unlimited free telephone support, a newly written manual specific to OHC-K use on the IBM PC/XT and compatibles, improved error checking, automatic Result Category determination, automatic insertion of corrected names and/or social security numbers in all pertinent records following the correction in just one of them; optional 8000 Hz utilization; a new, fast, dedicated hard disk version written in dBASE III; and other enhancements/debuggings which address most of the shortcomings so ably pointed out by the reviewers.

However, the review contained a few errors of fact and omitted mention of some of the most valued features of the program. These issues, and others which address differences of opinion, are presented in a comprehensive rebuttal statement which may be obtained from the author.

The materials and software reviewed in this issue were processed by Judy Montgomery, former associate editor.

Correspondence concerning materials and software:
Charlotte A. Ducote

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