

**Critical Review:**  
**How Accurate are Voice Accumulators for Measuring Vocal Behaviour?**  
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significantly lower average  $f$  than the nurses. The SLPs had higher values of PT than the nurses, but this difference was not significant. Both  $f$  and PT varied according to work activity, as expected. Based on these results, the authors concluded that the device was useful for reasons of vocal behaviour in the clinical setting.

The authors used appropriate, nonparametric statistical analyses and reported a significance level, which allowed for meaningful interpretation of the results. One weakness of this study is that the theory on which the authors based their hypotheses was not well described. Furthermore, the researchers did not control for the length of time that the device was used which may have contributed to variations in vocal behaviour.

Although many of the results from the studies by Ohlsson et al. (1989) indicated that the device accurately measured vocal parameters in certain circumstances (e.g., longer-term recordings), there were some unknown variables (e.g., sampling procedure, validity of comparison tool, effects of length of use) that should be considered when interpreting the results. The results of these studies are deemed suggestive. It is recommended that they be interpreted with some caution when making decisions about the use of this device both within and outside of the clinical setting.

Szabo et al. (2001) evaluated the accuracy of a voice accumulator for measuring  $f$  and PT in two studies. The first study was a single group laboratory study and the second study was a single group field study (level three evidence). The device used was a revised model of an earlier device described by Ohlsson et al. (1989).

Four subjects participated in the first study; 2 of the 4 subjects were employed in voice professions and the other 2 subjects had no history of vocal training. One microphone was connected to the voice accumulator and a second was connected to a computer program, which was considered a valid comparison measure. Differences between the measures from the accumulator and the computer program were expressed as a percentage. For  $f$ , results showed high agreement between the voice accumulator and the computer program. The correlation between the two measures was 0.97. With respect to PT, for every second of speech, high correlations were found between measures from the voice accumulator and computer program. Overall, results indicated that the voice accumulator was accurate in measuring  $f$  and PT for long-term recordings, in comparison to the computer program.

There are both strengths and weaknesses of this study. First, the authors discussed the sample characteristics in detail, which increases the ability to generalize study

This article has many strengths. First, the inclusion of a variety of recording samples (i.e., different voice qualities, frequencies, ana

unclear whether the device was equally accurate in all three recording scenarios. Given the results and these

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