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AUDITORY PROCESSING

Correlation Between Auditory Processing And Occupational Performance Of Office Workers

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Abstract

Research in recent years has demonstrated the connection between hearing loss and difficulties in the workplace [1,2]. Auditory processing is a fundamental element of hearing and contributes to the development of the cognitive skills of adults [3]. Auditory Processing Disorder (APD) often presents as a primary deficit in people with normal pure tone audiograms (PTA) values [4] and affects areas such as communication and work aspects of people's daily lives [5].
This research explores the correlation between auditory processing and occupational performance in office workers. Thirty-eight participants, all office workers, were assessed using various auditory tests, including speech-in-noise, duration pattern, and auditory memory tests. Occupational performance was self-reported using the Amsterdam Checklist for Hearing and Work (ACHW). The results underscored the importance of auditory processing abilities in workplace performance, particularly in environments requiring high cognitive and auditory effort. The research concludes that improving auditory processing could enhance occupational outcomes for office workers, with implications for those in noisy work environments.

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Objectives

Taking into account that there are limited studies in literature focusing on adults with APD, the present research aimed to investigate the correlation between auditory processing and work performance. Specifically, we asked whether office workers' scores in speech in noise (SinB), temporal processing and auditory working memory behavioral tests are related to their performance in the work context, assessed with a self-reporting questionnaire.

Methods and Materials

The study involved 38 office workers, who were assessed using the auditory tests Speech-In-Babble (SinB) test, Duration Pattern sequencing test (DPT), and Digit Span (DS). Participants' occupational performance was self-reported using the Amsterdam Checklist for Hearing and Work (ACHW). Hearing assessments included PTAs. The data were analyzed using non-parametric statistical methods. Participants were grouped into high and low-performance categories based on median scores for further analysis.

Results

Temporal processing correlated with social support, career satisfaction, and job control. Working memory correlated with listening effort, frequency of following conversations in quiet, and job control. Speech in noise perceptual ability correlated with the frequency of distinguishing between sounds.

AMCH indexes	SinB_r_wo	SinB_r_sv	SinB_le_wo	SinB_le_sv	DPT_r	DPT_le	DPT_ave	DS_for	DS_back	DS_total
Frequency of sound detection	0.121	0.154	0.05	0.14	-0.20	-0.15	-0.18	0.04	0.02	0.02
Listening effort in sound detection	0.074	0.147	0.12	0.15	-0.16	-0.20	-0.19	0.02	-0.08	0.01
Frequency of following conversations in noise	-0.055	-0.095	-0.10	-0.12	0.11	0.31	0.23	-0.02	-0.24	-0.11
Effort in following conversations in noise	-0.028	-0.086	0.10	0.12	0.17	0.24	0.18	**-.32***	0.16	-0.08
Frequency of following conversations in quiet	-0.078	-0.075	-0.18	-0.25	0.06	0.00	-0.02	**.35***	**.47****	**.50****
Effort in following conversations in quiet	0.234	0.288	0.19	0.18	-0.26	-0.17	-0.27	-0.21	-0.24	-0.28
Frequency of distinguishing between sounds	0.126	0.083	0.10	0.10	-0.16	-0.02	-0.05	0.11	0.05	0.07
Effort in distinguishing between sounds	-0.146	-0.132	0.09	0.18	0.02	0.08	0.04	0.00	-0.05	-0.08
Frequency of sound localization	0.109	0.114	-0.02	0.02	-0.11	0.09	-0.02	-0.04	0.00	-0.02
Effort in sound localization	0.090	0.085	0.07	0.15	-0.03	0.10	-0.01	-0.11	-0.06	-0.08
Job Demand	-0.075	-0.110	0.13	0.03	-0.09	0.12	-0.05	-0.05	-0.08	-0.13
Job Control	0.133	0.056	0.02	-0.04	0.26	0.13	0.18	0.19	**.34***	**.37***
Social Support	0.072	0.003	0.07	0.05	**.41***	0.16	**.34***	0.04	0.18	0.18
Career Satisfaction	0.120	0.062	0.11	0.01	**.33***	0.22	0.31	0.13	0.21	0.21

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 2. Correlation Analysis between AMCH indexes and scores on auditory processing and working memory tests AMCH, Amsterdam Checklist for hearing and work; SinB_r_wo, speech in babble right ear words; SinB_r_sy, speech in babble right ear syllables; SinB_le_wo, speech in babble left ear words; SinB_le_sy, speech in babble left ear syllables; DPT_r, duration pattern test right ear; DPT_le, duration pattern test left ear; DPT_ave, duration pattern test average score; DS_for, digit span forward; DS_back, digit span backward; DS_total, digit span total score

Conclusion

Results from this study suggest that there is a correlation between auditory processing and work performance, particularly in temporal processing skills. The latter was correlated with social support and career satisfaction. Better working memory was correlated with less listening effort and more frequent conversations in quiet, respectively. Furthermore, better recognition of speech in noise in the left ear was linked to more frequent distinguishing between sounds at work.
Overall, the findings highlight the importance of auditory processing abilities in occupational performance for office workers. Future research including a larger population or participants working at noisy workplaces could shed light on this particular connection.

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