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A new dichotic listening paradigm in schizophrenia: relationship to focused attentional functioning

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Background

Classical dichotic listening is a method for studying auditory laterality and consequently basic sensory processing. Nevertheless, by adding instructions about which ear to attend (forced condition), it is possible to also test controlled information processing. Specifically, the forced-right condition would reflect the capacity to focus attention, while the forced-left condition can be explained additionally as a result of inhibitory control over a stimulus-driven effect, since the latter paradigm also involves response conflict. The purpose of the present study was to examine the relationship between the two forced conditions and a test of sustained and focused attention.

Materials and methods

Thirty patients with schizophrenia (SCH) were assessed twice: on their hospitalisation and right before leaving hospital. Attention was measured by a dichotic listening task of simple words (DLT), under two conditions: forced right-ear (FRC) and forced left-ear (FLC) condition (wherein subjects were instructed to focus attention only on the right- or left-ear stimulus, respectively), yielding two measures: number of words repeated from the target ear minus number of words repeated from the opposite ear, respectively. Sustained-focused attention was measured by the Penn Continuous Performance Test (PCPT). In this computerized task, the subject is asked to respond to a set of vertical and horizontal lines whenever they form a digit. An efficiency measure (i.e., the ratio of number of correct responses per unit time for each participant, calculated by dividing the number of true positives by the average reaction time on correct responses) was used as an index of performance.

Results

Performance on the PCPT correlated significantly with performance on both conditions of the DLT, and at both testing times [1st time: PCPT - FRC: r=.525, p<.003, PCPT - FLC: r=.564, p<.001; 2nd time: PCPT - FRC: r=.379, p<.03, PCPT - FLC: r=.562, p<.001].

Conclusions

In conclusion our results suggest that both forced condition paradigms of a dichotic listening test tap into aspects of focused attention.