

The Association Between Anxiety and Recall Errors on the CVLT-3

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Background

As individuals age, they are more likely to present to their doctor with concerns of memory loss, and practitioners must determine if this is due to normal aging or neurologic or psychiatric factors.

Early studies have found that **anxiety reduces short-term memory (STM) capacity** for three- and four-letter words (Humphreys & Revelle, 1984), and that digit-span performance of low test-anxious subjects was approximately 20% higher than that of high test-anxious subjects (Darke, 1988).

Anxious individuals have been found to have less attentional capacity for task performance and, therefore, perform less well than non-anxious individuals on tasks that make substantial demands on working memory (Eysenck & Calvo, 1992).

However, other studies have found no significant relationship between anxiety and performance on memory measures. For example, Waldstein, et al., (1997) did not find any relationship between self-reported symptoms of anxiety and performance on memory measures such as verbal learning and story recall.

More recent hypotheses have suggested that working memory plays a key role in the cognitive problems experienced by anxious people by limiting resources necessary to perform goal-directed tasks (Shackman et al., 2006; Vytal et al., 2012).

Cognitive processing models suggest that anxious worry reduces WM capacity in general by competing for executive resources; the greater the worry and the more difficult the task, the greater the disruption in overall performance and accuracy of performance.

Objective

Purpose: Since anxiety can negatively impact memory and cognition, the current study examined the memory profiles of anxious but cognitively-intact adults and older adults to assess the degree to which anxiety symptoms were associated with verbal memory performance

Hypothesis: Self-report symptoms of anxiety would be related to increased intrusions, repetitions, and false positives errors on auditory memory tests.

Methodology

The data were drawn from archival files of adults seen for neuropsychological evaluations at an outpatient setting in the Mid-Atlantic United States. The files of adults who completed the CVLT-3 and BAI as part of their assessment battery were selected for inclusion. Adults given a diagnosis of Major/Mild Neurocognitive Disorder or those who obtained a Full Scale IQ (FSIQ) score of less than 80 on the Wechsler Adult Intelligence Scale - Fourth Edition (WAIS-IV) were excluded from the study to minimize the potential impact of significant neurocognitive impairment or low intellectual functioning on the above measures.

Measures

California Verbal Learning Test, 3rd Edition (CVLT-III)

Beck Anxiety Inventory (BAI): Self report measure that primarily assesses physical traits of anxiety across 4 levels: minimal, mild, moderate, and severe

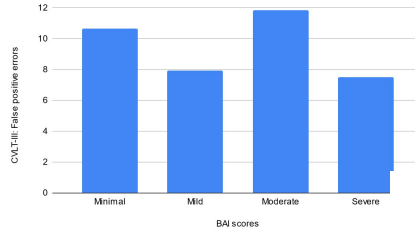
Results

Unexpectedly BAI scores were not correlated with intrusions, false positives, and repetitions. However, in a oneway ANOVA examining error differences across anxiety BAI scores, LSD post-hoc comparisons suggested that individuals with mild anxiety (M=9.23, SD=2.81) tended to have more false positive errors $F(3,96)=2.65, p=.053$ than those with minimal anxiety (M=10.73, SD=2.62).

Post-hoc exploratory gender-based analyses suggested that males with mild anxiety had more false positive errors (M=7.93, SD=2.43) than those with minimal anxiety (M=10.65, SD=2.83), but fewer false positive (M=11.83, SD=2.48) than those with moderate anxiety.

For individuals in their 50s, it appears that those with moderate anxiety (M=7.00, SD=1.41) have more repetition errors than those with minimal anxiety (M=10.33, SD=22.02)

Oneway ANOVA means: CVLT-III false positives across BAI scores for males



Discussion

Contrary to predictions, BAI scores were not correlated with intrusions, repetitions, and false positive errors.

Results could suggest that no strong relationships exist between verbal memory and physical symptoms of anxiety. However, additional research is needed.

Future research might look towards more generalized anxiety measures that assess cognitions, behaviors, and of expressions of anxiety other than the physical symptoms assessed in the BAI.

Regarding overall trends in the data and gender based findings, there might be an optimal level of anxiety that boosts memory performance while too much or too little hinders performance. The present pattern might be particularly applicable for males.

In regards to age, special attention and sensitivity might be needed by evaluators when interpreting repetition errors for individuals in their 50s, especially if moderate anxiety levels are present.

Future direction: a family history of cognitive decline in pare

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