Investigating the relationship between anxiety and working memory performance in adolescents

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Background

Adolescence is a critical stage for the development of anxiety, yet there is limited understanding of the cognitive mechanisms that underpin the onset and maintenance of symptoms. Working memory has emerged as a key explanatory mechanism in models of anxiety - anxiety is understood to impair task performance by capturing resource from the limited capacity working memory system (Eysenck et al., 2007). Mixed empirical findings suggest that cognitive interference accounts are oversimplified (see Moran, 2016 for a review), and assumptions regarding parity between different working memory tasks (e.g., complex span, N-back) limit the specificity of findings. Furthermore, there is limited research on anxiety-related working memory impairments in adolescents.

Method

Participants aged 16-18 years (Study 1: N=36; Study 2: N=45) completed:
- self-report measures of executive function (BRIEF-2; Gioia et al., 2000) and trait and state anxiety (STICSA; Ree et al., 2000)
- a battery of carefully matched verbal and visuospatial working memory tasks

Task design:

Complex span: verbal, visuospatial
2-back: verbal, visuospatial

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Results

1. All tasks demonstrated good reliability and interrelatedness.
2. Self-report measures: increased trait anxiety associated with greater executive function difficulties: see Figure 1.
3. No evidence of pervasive anxiety-related impairment in adolescent working memory performance: see Figure 2.

Conclusions

While anxious individuals reported greater impairment in executive function, there was no evidence of pervasive anxiety-related working memory impairment (in spite of the tasks demonstrating good reliability and interrelatedness). There is an acknowledged lack of agreement between self-report and behavioural measures of cognitive performance (e.g., Soto et al., 2020), however, anxiety-related working memory deficits are well documented (see Moran, 2016 for a review). Future research will seek to utilise tasks that are sensitive to anxiety-related differences, and account for the role of self-identified versus “objective” cognitive difficulties.
