Neurocognitive correlates of emotional and behavioural problems in adolescents at school

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Mental health problems in children and adolescents range from 10 to up to 20% of the population (Dray et al., 2017). Moreover, previous studies revealed that these symptoms perpetuate in time and potentially could become more intense with age (McGrath et al., 2016). Therefore, studies including phenotypically characterized samples are still needed. Neurodevelopmental changes in the brain (e.g., pre-frontal cortex) are related to the development of executive functions (EFs).

OBJECTIVES: Thus, the main goal of this study was to characterize the neurocognitive phenotype of adolescents at risk for mental health problems by comparing them with non-risk healthy adolescents.

METHOD

The sample was composed of 850 students, 375 males (44.1%) from 34 educational centers and 98 classrooms. The mean age was 16.5 years ($SD = 1.36$), with age ranging from 14 to 19 years. **The Penn Computerized Neurocognitive Battery (CNB)** (Gur et al., 2010, 2012), **The Strengths and Difficulties Questionnaire (SDQ)** (Goodman, 1997) and **The Oviedo Infrequency Scale (INF-OV)** (Eduardo Fonseca-Pedrero, Paino-Piñeiro, Lemos-Giráldez, Villazón-García, & Muñiz, 2009) were used in the study.

RESULTS

The ANOVAs revealed statistically significant differences by group in Executive-Control ($F_{(1,92)} = 17.349, p \leq 0.001, partial \eta^2 = 0.159$), Episodic Memory ($F_{(1,92)} = 32.906, p \leq 0.001, partial \eta^2 = 0.112$), Complex Cognition ($F_{(1,92)} = 29.498, p \leq 0.001, partial \eta^2 = 0.243$), but not for Social Cognition domain ($F_{(1,92)} = 3.392, p \leq 0.001, partial \eta^2 = 0.036$). The effect sizes found were large..

CONCLUSIONS

Youths at mental risk showed a significant decrease in performance accuracy across different neurocognitive domains. At risk adolescents had a lower performance on all the domains besides Social Cognition (Merikangas et al., 2017). Limitations: he cross-sectional nature of the study precludes the interpretation of the neurocognitive performance. Future studies could continue the study of phenotypic measures of cognitive domains with specific mental health problems

Table 1
Accuracy neurocognitive performance scores by group

Neurobehavioural Domain	Group				<i>p</i>	<i>partial</i> η ²
	Low Risk		High Risk			
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>		
Executive Function	1.059	0.164	0.092	0.164	<0.001	0.159
Episodic Memory	1.118	0.243	-0.054	0.243	<0.001	0.112
Complex Cognition	1.179	0.270	-0.892	0.270	<0.001	0.243
Social Cognition	0.616	0.246	-0.026	0.246	0.069	0.036

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