Novel evidence about the role of the MAOA-Low-activity alleles in increasing the individual susceptibility to the environment

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Callous-unemotional (CU) traits identify a group of children with conduct problems exhibiting early onset and high levels of aggression.[1] Deficits in processing facial emotion expressions, particularly fear and sadness, underlining their diminished empathy and prosocial behavior,[2-6] have been observed in children with CU traits.
Recently published findings by our group suggested a role for the MAOA-uVNTR Low-activity alleles on this impairment in emotion recognition.[7] Here, we aimed to deepen our findings by exploring whether the observed association between the MAOA uVNTR Low-activity alleles and impaired processing of fearful and sad facial expressions was linked to primary or secondary CU traits.
A clinical sample of 95 boys with Conduct Disorder, assigned to the primary or secondary CU group based on low or high levels of internalizing symptoms respectively, was assessed for emotion processing using an eye tracker while whatching images of happy, fearful, angry, disgusted, and sad facial expressions. Emotion recognition, the number of fixations (Fixation Count) and the average length of fixation (Fixation Duration) to the eye region were recorded.
Results showed that, among children with CU traits, only those with secondary CU traits, who carried the MAOA-Low-activity alleles, had deficits in processing fear emotions.
As recently proposed by the ESCAPE (Emotionally Sensitive Child-Adverse Parenting Experiences-Allostatic (Over)Load) model, children with secondary CU traits, differently from those with primary CU traits, are emotionally sensitive to the environment (Kimonis, 2023). Our results let us hypothesize that the MAOA-Low-activity alleles may be responsible for the increased environmental sensitivity characterizing this group of children.
These findings are in line with the existing literature[8-9] on the role of MAOA-Low-activity alleles in modulating the individual susceptibility to the environment. They also add novel evidence to the complex interplay between genetics and environment in shaping human social behavior introducing novel challenges to the concept of Free Will.

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