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Creativity in Tourette Syndrome

Background

Creativity is *"the union of pre-existing elements that produce new and useful combinations"* (Poincaré H., 1999). The main features of creativity (Williams' F., 1994) are thinking-cognitive divergent factors (fluidity, flexibility, originality, elaboration) and personality-emotional divergent factors (curiosity, imagination, complexity, risk taking).

As Tourette syndrome (TS) does, also creativity and divergent thinking activate the dorsolateral prefrontal circuit and anterior cingulate circuit of the frontal cortex. In particular, the frontal lobe is linked with idea generation; this phenomenon is clearest in verbal creativity, but it also shapes non-linguistic creativity.

At the same time, creative personality is influenced by mesolimbic dopamine, especially when measured by Novelty Seeking and Creative Drive categories and TS presents an altered dopaminergic synaptogenesis.

The assumption that TS is linked to creativity is first described in 1992 by Oliver Sacks, professor of Clinical Neurology at the Albert Einstein College of Medicine in New York.

Research in Europe

The hypothesis of the study was that TS patients are more creative than not-TS people. The study (Porta M., Zanaboni C., 2010) took place in Italy at IRCCS Galeazzi of Milan, it involved 23 TS children/adolescents (6-18 years old), their teachers, and parents, and a control group tested by TCD (Williams F., 1994). Results from the flexibility subtest of the Divergent Thinking Test confirm the initial hypothesis: creativity is statistically higher in the TS group than in the control sample (Fig.1). Flexibility is the ability to change your approach towards a stimulus, the capability to pass from one category to another, and change your mind set to avoid obstacles.

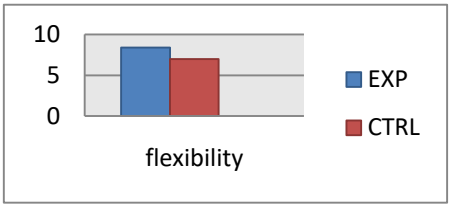

Fig. 1. Flexibility is statistically higher in the TS group (m= 8.4) than in the control sample (m=7).

Research in the U.S.

The study was repeated at the Yale Child Study Center with a sample of 18 TS patients, and the main results confirm that flexibility is more likely to be developed in TS patients than in the control group. Additionally, the findings of this second study found fluidity to be more developed in the clinical sample than in controls (Fig.2). Fluidity is the ability to quickly consider a huge quantity of ideas and then generate a large number of valid responses.

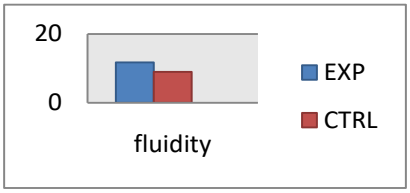

Fig. 2. In the U.S. experimental sample Fluidity level is higher (m=11.71) than in control sample (m=9).

Interventions Based on Creativity

As a treatment supplement to medications and/or other psychological techniques such as Habit Reversal Training, TS patients may benefit from therapeutic programs including visual arts, music, acting and dance. Actually, it could incorporate body activity to deal with ADHD and the practice of new cognitivebehavioral and interactive relationship styles to soften OC symptoms. It could also improve these patients' social skills and self-efficacy, bolstered by public approval from the final performance. This could cause a shift away from the immediate satisfaction given by the impulsive pleasure of tic manifestation towards a more gradual and controlled one given by the creative product and by extension of cognitivebehavioral patterns learned outside the therapeutic context.

The school environment is often a stressful context for TS patients. Ideally, by introducing psychoeducational classes for teachers, parents and students and a recreational lab for classmates of Tourette students, school could become a supportive or even therapeutic setting. A TS creative school lab could first take into account motor/ linguistic limitations in choosing activities, then include simple tasks to avoid feelings of failure on the part of the patients, as well as exclude tasks that may highlight symptomatology to prevent embarrassment or tiredness.

Conclusion

The correlation between psychopathology and creativity has already been explored in evolution theories (Huxley A., 1964). According to Huxley, because psychopathology has a genetic component, it must show some positive aspects; creativity is an example. Creativity is one's ability to use cognitive and aesthetic skills and empathy towards cultural evolution (Csikzentmihalyi M., 1998).

The link between TS and creativity has been verified empirically. Many TS patients have a strong expressive creative predisposition that treatment providers and caregivers may use to maximize therapeutic benefit.

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