Emotional facial expressions decoding in siblings of children with autism

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INTRODUCTION

The ability to identify other individual's emotions, including their emotional facial expression (EFE), is fundamental to many social processes. Individuals with autism spectrum disorders (ASD) show deficits in several empathy-related processes, including EFE decoding (e.g. Ashwin et al., 2007). The object of this study was to investigate the capacity to decode accurately EFE in siblings of children with ASD in relation to their propensity to present autistic characteristics'. Indeed, autism is considered to be substantially influenced by genetic factors and relatives of ASD individuals present different type of deficits including the domains of language, theory of mind, and executive functioning (e.g., Fombonne et al., 1997).

Hypotheses:

- **Compared to siblings of healthy children, siblings of children with ASD will be lower in an EFE decoding task. The previous results on that topic are contradictory (Bölte & Poustka, 2003; Dorris et al., 2004, Palermo et al., 2006)**
- **As reported previously by Bishop et al. (2004), the siblings of children with ASD will present more autistic characteristics'.**
- **The propensity to present autistic characteristics' will be correlated to the accuracy in an EFE decoding task.**

METHODS

Participants
Experimental Group: 18 children (7 to 15 years old; four girls and 14 boys) siblings of children with ASD .
Control Group: 18 children matched with the children from the experimental group in function of age and sex. All children from the control group had brother(s) and/or sister(s)

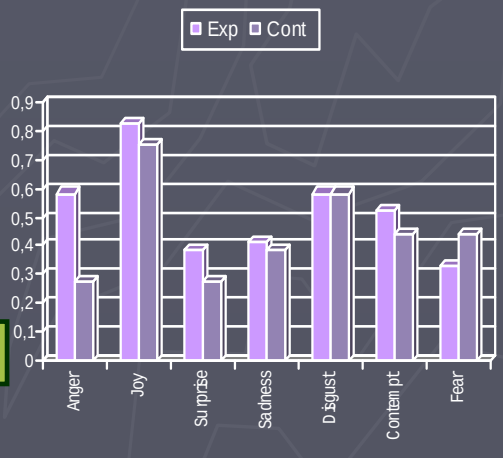
Emotional Facial Expression Decoding Task
The children had to associate a photograph of an EFE of 50% intensity (the photographs come from the material of Matsumoto & Ekman, 1988) with a sentence describing a situation of the everyday life in which a person is susceptible to feel an emotion of an average intensity. The task comprised two sets (one of men, one of women) of seven photographs of EFE (anger, joy, surprise, sadness, disgust, contempt, and fear). The two sets (one set at a row) were presented in front of the child who had to read the seven sentences (one for each emotion) and matched each photograph with a the accurate sentence.

Example: She gets into the kitchen and sees a huge spider on the table.

Autism-Spectrum Quotient (AQ; Auyeung et al., 2007; Baron-Cohen et al., 2006)
One parent of the child answered to a French version of the AQ. This quotient aims to evaluate the degree to which an individual presents some autistic characteristics'. The AQ comprises three versions (Adults -16 years and older, Adolescents -12 to 15 years old, Children – 4 to 11 years old). Because the computation of the scores are different for each version, we used only the score of the participants that were assessed with the children version. The AQ is a 50-items questionnaire that assess five domains of competence: social skills, communication skills, imagination, attention to detail; and attention switching/tolerance of change .

RESULTS

- Is the control group better than the experimental group to find the accurate association between an EFE and an emotional story?
  Group effect: $F(1,34) = 1.2$, $p = .28$ — **NO**
- Does the control group differ from the experimental group in their propensity to be accurate in function of the emotion display by the stimulus?
  Emotion x Group : $F(6,204) = 1.41$, $p = .21$
  Emotion x Sex x Group : $F(6,204) = .51$, $p = .80$ — **NO**
- Does the experimental group have an higher AQ than the control group?
  The difference between the two groups does not reach a statistical level of significance, t (26) = 1.08, p = .29 (Exp: M = 54.83; Cont: M = 50.11) — **NO**
- Is there an association between the AQ and the propensity to associate accurately an EFE with an emotional story?
  Because the two groups do not differ significantly for both variables, we regroup them together. The lower the child's level of AQ was, the more he/she associated accurately EFEs and emotional stories, $r(28) = -.47$, $p = .01$ — **YES**



CONCLUSIONS

Contrary to our hypothesis, but consistent with the results of Bölte, & Poustka (2003), the capacity of EFE decoding and the comprehension of brief emotional stories seem to be preserved in siblings of ASD. Further, contrary to the results of Bishop et al. (2004), they do not seem to present more autistic traits than children from the control group. Both autistic measures evaluated in this study fail to show any difference between the two groups. However, these results must be taken cautiously in reason of the small sample size of this study.

An interesting finding is the high negative correlation between the AQ and the accuracy in the EFE decoding task. This result suggests that some components of the empathy deficit of children with ASD could be extended to individuals that present some autistic traits. The clinician must be vigilant to this personality characteristics' in reason of their relation with poor interpersonal relationship quality.

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