Title: Expressive Drawing Ability, Emotion Recognition and Theory of Mind in Children with ASD and FXS

Author: Carrie Ballantyne

Introduction: Drawing ability in individuals with autism spectrum disorders (ASD) tends to be relatively intact (Charman & Baron-Cohen, 1993). However, research shows that drawings of children with ASD lack social and emotional involvement that are possibly due to impairments in theory of mind (ToM) and emotion recognition (EF: Jolley, O’Kelly, Barlow & Jarrold, 2013). Additionally, self - drawings may be seen as advanced forms of the mirror test of self - recognition and have been used to investigate many aspects of development such as aspects of cognitive development, emotional states and personality traits.

Individuals with Fragile X syndrome (FXS) display a wide range of social difficulties including social anxiety and similarities to ASD in their social - cognitive processing. However self - concept and emotional depiction is yet to be compared between children with FXS and ASD and it is unclear whether these factors are linked to ToM. The current study uses children's drawings to examine self – concept, emotional depiction and ToM in children with FXS, and ASD.

Method: A FXS group (n = 20), a comorbid ASD and FXS group (AFXS) (n=18), a high functioning ASD group (HFA; n =20), a low functioning ASD group (LFA; n = 20) and 40 typically developing children (TD) matched for chronological age and non - verbal mental age took part in the study. A pass/fail ToM task and the social communication questionnaire (SCQ) was compared to children’s drawings of themselves and a house (coded using McCarthy's standardised scoring procedures) and of emotional expression(pictures were scored on quality and quantity of expression, whether it included content relating to people and a social theme, in accordance to Jolley, et al, 2013). ToM and social communicative ability scores were used to predict performance of self-representation drawings and drawings of emotional states.

Results: The SCQ and ToM tasks were predictive of performance in the self-representation drawing task for the ASD groups but not the FXS groups. In drawing emotion expression, the ASD group performed in a similar manner to their MA matched TD counterparts, however they produced fewer overall social scenes and was not predicted by SCQ scores. The FXS and AFXS groups' performance is comparable to their MA group only when drawing happy scenes and performance could not be predicted by either ToM or SCQ scores, although the AFXS group showed fewer sad social scenes.

Discussion: The current study provides insight into representational drawing development of children with ASD and FXS, which cannot only be accounted for by mental age. It also shows the importance of social cognition in relation to social drawings. The study furthers the understanding of the differences between social cognition and self-representation in FXS and ASD and subtle group differences emerged. For example, clear group differences were shown in drawing happy and sad pictures, with the sad pictures including fewer social scenes in the AFXS group but not the FXS group. These findings add to previous literature and show the complexity of representational drawings across different developmental disability groups.

Key References: