

# Social Perception Deficits in Adolescent and Adult Autism Spectrum Disorders

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## Introduction

The Advanced Clinical Solutions for the WAIS-IV/WMS-IV (Wechsler, 2009) is a battery of tests and procedures designed to supplement the standard WAIS/WMS-IV. One component of the ACS is the Social Perception subtest. This subtest is designed to measure processes thought to be involved in social interactions and communication.

Neurodevelopmental disorders are often associated with impairments in social behavior, particularly in Pervasive Developmental Disorders (APA, 2000). Individuals diagnosed with autism spectrum disorders show deficits in the development of multiple aspects of face processing including face recognition and affect recognition (Golarai, Grill-Spector, & Reiss, 2006). Adults diagnosed with high functioning Autistic or Asperger's Disorders do not show normal brain activation in the amygdala and orbitofrontal regions in response to fearful faces but do show activation in the anterior cingulate and superior temporal lobes (Ashwin, Baron-Cohen, Wheelwright, O'Riordan, & Bullmore, 2007).

Asperger's Disorder in adults is associated with atypical event-related potentials when identifying facial expressions of emotion (O'Connor, Hamm, & Kirk, 2005) and reduced activation of the extrastriate cortex and fusiform gyrus (Deeley et al., 2007). Adults diagnosed with Autistic Disorder show deficits in identifying fearful, disgusted, happy, (Humphreys, Minshew, Leonard, & Behrmann, 2007) and sad (Boraston, Blakemore, Chilvers, & Skuse, 2007) facial expressions. The deficits in affect recognition seen with Autistic Disorder are not attributable to impairments in lower level visual-perceptual processing (Humphreys et al., 2007). In addition to deficits in facial affect recognition, adults with Autistic Disorder also have deficits in identifying emotion from prosody (Hollander et al., 2007).

## Methods

### Procedures

The Social Perception subtest is composed of 3 item sets that measure different components of social perception. In the first item set, the examinee sees 6 Faces expression one of 7 possible emotions: happy, sad, angry, disgust, fear, surprise, or neutral. The examinee labels the emotion expressed by each face. In the second item set, the examinee listens to an audio tape while viewing 6 faces on a stimulus page. The audio presents a verbal statement with prosody which is either happy, sad, fearful, angry, surprised, disgusted, neutral, or sarcastic. The examinee must determine the emotion of what was being said on the audio and match it to the correct facial expression. In the third item set, the examinee hears an expression on the audio tape while viewing 4 pictures with people interacting. The examinee must determine the emotion being expressed from the prosody on the audio and match it to the pair of people interacting that best represent what was heard on the audio. The examinee must state the emotion being expressed and if the tone of voice changed the meaning of what was said. If the prosody did change the meaning of what was said, the examinee indicates what the speaker really intended to say. The Social Perception subtest yields 4 scores: total, affect naming, prosody, and pairs. Contrast scores comparing total social perception with WAIS-IV GAI, VCI, and PRI are available to rule out deficits due to general or specific intellectual deficits resulting in low scores on social perception.

Example of a Picture from a Pairs Item



### Participants

#### Controls

The sample was comprised of 800 examinees ages 16-90 years of age. Exclusionary criteria included any history of neurological, psychiatric, developmental or medical condition affecting cognitive functioning. Subjects were screened for general cognitive impairment and poor effort. The demographic characteristics of the sample were matched to 2005 census data for ethnicity and education level. Examinees above the age of 70 were excluded based on research with previous editions of this subtest that showed declining visual and spatial discrimination skills interfered with older examinees performance on this subtest.

#### Clinical Groups

The clinical samples were collected as part of the ACS standardization. Sixteen adults (21.7 ± 6.4 years of age) diagnosed with Autism and having an IQ > 70 participated in this study. Twenty-seven adults (22.1 ± 7.7 years of age) diagnosed with Asperger's Syndrome and having an IQ > 70 were sampled for this study. Age, education, and ethnicity matched controls were randomly selected from the normative sample.

## Results

### Reliability and Correlation with Intellectual Functioning

In the normative sample, obtained internal consistency measures were: Social Perception Total (.70-.84), Affect Naming (.53-.85), Prosody (.64-.79), and Pairs (.78-.85). The Social Perception Total score correlated significantly with WAIS-IV GAI (.40), VCI (.38), PRI (.32), WMI (.29), PSI (.35) and FSIQ (.42).

### Clinical Data

The Autistic group performed in the borderline to low average range: total social perception (SS=4.4), affect naming (SS=6.4), prosody (SS=4.9), and pairs (SS=4.9). Compared to matched controls, the Autistic sample performed significantly lower on all measures ( $p < .01$ ) except affect naming, with effect sizes ranging from 1.71 (total score) to .57 (affect naming).

Table 1: Social Perception by Clinical Group

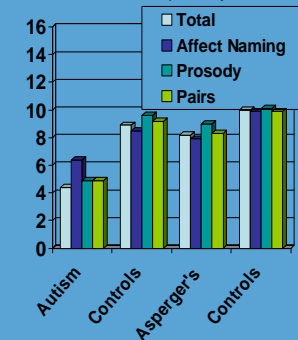
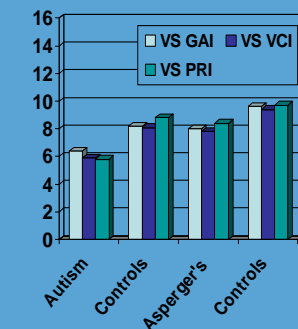


Table 2: Social Perception VS IQ by Clinical Group



The Asperger's group performed in the low average to average range: total social perception (SS=8.2), affect naming (SS=7.9), prosody (SS=9.0), and pairs (SS=8.3). The total score and affect naming were significantly lower than matched controls.

## Conclusion

Adolescents and adults with Autism show general deficits in social perception while those with Asperger's syndrome had specific difficulties with affect naming. These results validate the use of the ACS: Social Perception subtest in these clinical samples.