**Title**: The Development of the Childhood Joint Attention Rating Scale: A PROMIS®ing Method for Autism Spectrum Disorder in China

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**Introduction**: The Childhood Joint Attention Rating Scale (CJARS) is a caregiver-report questionnaire assessing verbal and nonverbal behaviors associated with joint attention. Such a comprehensive and standardized measure of social communication is valuable for screening and identification of autism spectrum disorder (ASD) and other developmental concerns. Given the dearth of valid standardized measures developed for Chinese children, the adaptation and validation of a Chinese version of CJARS holds the potential to address this gap. The present study aims to examine (1) the factor structure, convergent validity, and reliability of the culturally adapted Chinese CJARS using the PROMIS® (Patient-Reported Outcomes Measurement Information System) framework in young Chinese children, and (2) longitudinal changes in joint attention as measured on the CJARS in children with ASD.

**Method**: Study 1: Caregivers of 368 children with ASD diagnosis (Mage = 4.85, SD = 1.62, 77.9% male) and 367 typically developing (TD) children (Mage = 4.96, SD = 1.46, 57.1% male) were recruited for the initial validation. Caregivers completed a demographic information questionnaire, as well as the Social Responsiveness Scale (SRS) and Chinese CJARS. Confirmatory Factor Analysis was conducted to examine the factor structure of CJARS. Cronbach’s alpha was calculated to assess its internal consistency. An Independent sample t-test was conducted to examine differences in CJARS scores between ASD and TD groups. Study 2: 35 children with ASD (Mage = 5.42, SD = 1.21, 82.9% male) were recruited to participate in a follow-up study. Children were administered Early Social Communication Scale (ESCS). Their caregivers completed SRS, CJARS, Social Communication Questionnaire (SCQ) and Adaptive Behavior Assessment System-Second Edition (ABAS-II) at three time points: baseline, 3-month point, and 6-month later. The convergent validity was assessed by conducting Pearson's correlation. Repeated measure ANOVA were conducted to look at change over time.

**Results** Factor analysis on the CJARS identified three factors, consistent with the original version. Fit indices for the three-factor model of the Chinese version of CJARS showed acceptable fit: CFI (0.83), RMSEA (0.053). The total CJARS score was significantly lower in the ASD group (MCJARS = 4.50, SD = 1.12) compared to the TD group (MCJARS = 5.45, SD =0.95) (*t*(733) = –12.51, *p* < 0.01). The internal consistency of the CJARS score was Cronbach’s α= 0.978. CJARS scores showed moderate convergent validity with ESCS scores (0.33-0.57). CJARS scores did not change significantly over time. There were moderate correlations between changes in joint attention and social communication skills of ASD children as well as their alleviation in ASD symptoms throughout the entire process (ASD symptoms: *r = -*0.63; social communication: *r =* 0.60).

**Discussion:** The Chinese version of CJARS showed good construct validity with three factors as the original version, high internal consistency, and good convergent validity with other existing measures. The CJARS could serve as an instrument of joint attention in Chinese children with ASD with potential utility in screening and treatment monitoring.

**References:**

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