

# The Performances and Correlates of Imitation in Children with Autism Spectrum Disorders

Rong-Di Lin,<sup>1</sup> Chin-Chin Wu,<sup>2</sup> Chung-Hsin Chiang,<sup>3,4</sup> Wen-Jiun Chou,<sup>5</sup> and Yuh-Ming Hou<sup>6</sup>

<sup>1</sup>Department of Clinical Psychology, Kaohsiung Municipal Kai-Syuan Psychiatric Hospital

<sup>2</sup>Department of Psychology, Kaohsiung Medical University

<sup>3</sup>Department of Psychology, National Chengchi University

<sup>4</sup>Research Center for Mind, Brain and Learning, National Chengchi University

<sup>5</sup>Department of Child and Adolescent Psychiatry, Chang Gung Memorial Hospital Kaohsiung Medical Center, Chang Gung University College of Medicine

<sup>6</sup>Department of Psychiatry, Ditmanson Medical Foundation Chia-Yi Christian Hospital

The present study had two purposes. First, we wanted to explore the imitation performance in children under 4 years of age with autism spectrum disorders (ASD). Second, we planned to explore the abilities related to different imitation tasks in children with ASD. The participants were 92 children, including 49 children with ASD (chronological age: 25 to 50 months, mental age: 10.5 to 47.25 months), 22 children with developmental delay (chronological age: 25 to 47 months, mental age: 18.25 to 38.5 months), and 21 infants with typical development (chronological age: 18 to 30 months, mental age: 19.5 to 33.75 months). Four tasks were used for evaluating imitation abilities, including meaningful action on objects, nonmeaningful action on objects, meaningful manual movement and nonmeaningful manual movement. In addition, the Autism Diagnostic Observation Schedule (ADOS) (Lord, Rutter, DiLavore & Risi, 1999) was used to assess autistic symptoms of children with ASD. The results of the current study revealed that the children with ASD showed significant impairment compared to the children with developmental delay on all imitation tasks. However, compared to toddlers with typical development, children with ASD performed with significant impairment on both meaningful action on objects and nonmeaningful action on objects but not on meaningful manual movement and nonmeaningful manual movement. Based on the developmental quotient, children with ASD were divided into high-functioning and low-functioning groups. The current study also revealed that high-functioning children with ASD performed without significant impairment on meaningful action on objects, but low-functioning children with ASD showed significant impairment on all imitation tasks. All of the imitation abilities were significantly related to different developmental and social abilities, including mental age, verbal mental age, nonverbal mental age, receptive language, expressive language, responding joint attention, and autistic symptoms. However, the relations between the imitative abilities and developmental abilities, language, responding joint attention and autistic symptoms supported that imitative abilities play an important role in the development of social and cognitive skills, and provide a direction for an early intervention program for children with ASD.

**Keywords:** *imitation, autism spectrum disorders, autistic symptoms, correlates*