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Original article

Examining cross-cultural differences in autism spectrum disorder: A multinational comparison from Greece, Italy, Japan, Poland, and the United States

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ABSTRACT

Autism spectrum disorder (ASD) is characterized by social and communication impairments as well as restricted, repetitive behavior patterns. Despite the fact that ASD is reported worldwide, very little research exists examining ASD characteristics on a multinational scale. Cross-cultural comparisons are especially important for ASD, since cultural differences may impact the perception of symptoms. Identifying behaviors that are similarly reported as problematic across cultures as well as identifying behaviors in which there is cultural variation could aid in the development and refinement of more universally effective measures. The present study sought to examine similarities and differences in caregiver endorsement of symptom severity through scores on the *Baby Infant Screen for Children with aUtIsm* Traits (BISCUIT). The BISCUIT was utilized to examine ASD core symptomology in 250 toddlers diagnosed with ASD from Greece, Italy, Japan, Poland, and the United States. Significant differences in overall ASD symptom severity and endorsement were found between multinational groups. Implications of the results are discussed.

1. Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by impairments in social interaction and communication, as well as the presence of repetitive, restricted patterns of behavior, interests, and activities [1,2]. ASD presents early in life and can often be diagnosed as early as 24 months of age [3,4]. Early identification and treatment of ASD and other developmental disorders is crucial for optimizing the outcomes of individuals with an ASD diagnosis [5–9]. Therefore, timely screening practices have significant implications for early diagnosis.

Although ASD is a universal disorder with strong biological underpinnings that occurs with similar core features, symptom presentation appears to be susceptible to cultural influences [10]. Culture has been defined as "a set of behavioral norms, meanings, and values or reference points utilized by members of a particular society to construct their unique view of the world, and ascertain their identity" [11]. Cross-cultural comparisons are especially important for ASD since cultural views regarding appropriate behaviors and normal development for a certain culture may impact parent/caregiver reports and ultimately the ASD diagnosis [10,12].

As culture is such a complex and pervasive construct, it can be difficult to determine the best way to accommodate cultural influences in regards to psychological assessment. Rogler [13] proposed a hierarchical, three level framework for understanding how culture affects the diagnostic process of psychiatric disorders that may be useful in conceptualizing how culture influences the diagnosis of ASD. Rogler suggested that, rather than trying to control for cultural influences, culture should be recognized as a

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fundamental aspect of all phenomenological experience and therefore as an integral factor in psychological disorders. The first level describes how culture influences the assessment of symptoms and symptom severity. The second level of Rogler's hierarchy is the configuration of symptoms into disorders which is particularly relevant to the use of culturally sensitive diagnostic and screening measures. The third level is cultural factors in the diagnostic situation, or the impact of cultural differences between the patient and diagnostician. Although all three tiers are important when considering the diagnostic process, the first level pertaining to symptom assessment is the most relevant to the current study.

According to Rogler's framework, cultural norms mediate the endorsement of symptoms and rating of symptom severity. Parent report of child symptoms thus may be influenced by the aspects of development most valued within a culture. For example, results of research conducted in the United States suggest that American parents tend to be more concerned about language delays [14]. In contrast, Indian parents have been found to tend to have early concerns about social difficulties [15] and Latina mothers may tend to be concerned about temperament [16]. Culture may also influence how willing parents are to report certain symptoms. For instance, parents may be less likely to report symptoms that they view as socially undesirable, as they may associate this with social stigma. The degree to which socially undesirable symptoms lead to societal stigma may differ across cultures [17]. This suggests that ethnically-based cultural norms can influence perception of social undesirability of mental symptoms, and ultimately the endorsement of those symptoms.

Researchers have found some multinational differences in endorsement of problems related to ASD, including core symptomology [18,19], challenging behaviors [17], social skills [20], and sensory issues [21]. To assess these symptoms, several ASD screening and assessment measures such as the Modified Checklist for Autism in Toddlers (M-CHAT) [22] and the Baby and Infant Screen for Children with aUtIsm Traits [23] have been adapted for cross-cultural use. However, there is currently a dearth of research on multinational endorsement of symptoms, and therefore there is little consensus on how culture impacts ASD symptom perception.

Identifying behaviors in which there are cultural variations in parent endorsement and expectation could help with measure refinement and provide clinicians with increased cultural-competency when conducting ASD assessments. The aim of the current study was to compare parent symptom endorsement on the Baby and Infant Screen for Children with aUtIsm Traits – Part 1 (BISCUIT – Part 1) in several country sites to examine cultural differences. The BISCUIT – Part 1 was utilized to examine ASD core symptomology in toddlers from five different countries: Greece, Italy, Japan, Poland, and the United States.

2. Methods

2.1. Participants

The initial pool for this sample consisted of 656 participants: 122 participants from Greece, 74 from Italy, 49 from Japan, 210 from Poland, and 203 from the United States. As a diagnosis of ASD was required for study inclusion, 350 participants who did not meet ASD diagnostic criteria were removed from the initial sample, leaving 39 participants from Greece, 50 from Italy, 49 from Japan, 114 from Poland, and 54 from the United States. Due to unequal group sizes, participants were randomly deleted from the largest group, the Polish sample, as recommended by Nimon [24], until it was no more than 1.5 times larger (n = 58) than the smallest group, the Greek sample [25]. Random deletion of cases was conducted using SPSS. The final sample consisted of 250 participants (Table 1).

Table 1
Participant demographics by country.

	Greece (n = 39)	Italy (n = 50)	Japan (n = 49)	Poland (n = 58)	USA (n = 54)	Total (n = 250)
Age (in months)						
M	28.65	29.76	29.65	29.07	28.61	29.14
SD	6.04	5.45	5.17	5.83	5.17	5.48
Range	19.00	26.00	17.00	25.00	20.00	32.00
Gender						
Male (%)	82.1	72.0	75.5	74.1	87.0	78.1
Female (%)	17.9	28.0	24.5	25.9	13.0	21.9

The sample from Italy was recruited from a national referral center that assesses children suspected of having a developmental disability. Participants from Italy received a clinical diagnosis of ASD according to Diagnostic Statistical Manual-Fifth Edition (DSM-5) criteria, confirmed by the Autism Diagnostic Interview-Revised (ADI-R), Autism Diagnostic Observation Schedule (ADOS) and the Childhood Autism Rating Scale (CARS). Participants from Greece were recruited from pediatric and psychiatric hospitals from different parts of Greece and through referral to the author's private practice. Diagnoses for all Greek participants were made by a psychologist based on DSM-5 criteria using the ADOS. Participants from Poland were recruited from Early Diagnosis and Intervention Centers from three cities in Poland and through pediatrician referral and were diagnosed by child psychiatrists with more than 10 years of experience in the field according to International Classification of Diseases-Tenth Edition (ICD-10) diagnostic criteria.

The sample from Japan was recruited through referrals from pediatric hospitals, child developmental centers, and pediatrician referral. Participants from Japan were diagnosed by child psychiatrists or pediatricians based on Diagnostic Statistical Manual-Fourth Edition-Text Revised (DSM-IV-TR) criteria, using scores attained from the Japanese version of the M-CHAT [26] and the Kyoto Scale of Psychological Development Test (KSPD), which is comparable to the Bayley Scales of Infant Development- Second Edition [27]. Participants from the United States were recruited through a through referral from a statewide early intervention program under the Individuals with Disabilities Education Act, Part C. Diagnoses were made by a licensed psychologist with more than 30 years in the field according to either DSM-IV-TR or DSM-5 criteria, depending on the date of assessment, using the CARS and Autism Spectrum Disorder Observation for Children (ASD-OC) [28].

2.2. Ethical considerations

This study was approved by the following institutions: the Louisiana State University Institutional Review Board; the Ethics Committee of the Faculty of Psychology at the University of Warsaw; the Ethics Committee of the National Center of Neurology and Psychiatry, Japan; the University of Trento's Department of Psychology and Cognitive Science Internal Board; and the ethics committee of the diagnostic and therapeutic center "Learning through Play" in Greece. All procedures were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all informants, who were parents or legal guardians of the participating children.

2.3. Measures

The BISCUIT is an informant rated measure used to screen for ASD in children 17 to 37 months of age [29]. The measure contains three parts assessing ASD symptomatology, comorbid