Abstract This study examined whether repetitive behaviours were a differentiating feature of autism in children aged less than 51 months. The study also examined the relationship between age (chronological and developmental) and repetitive behaviours in young children with autism. Standardised developmental and diagnostic assessments were conducted on 55 children aged between 22 and 51 months, consisting of 40 developmentally delayed children with DSM-IV-TR Autistic Disorder and 15 developmentally delayed children without Autistic Disorder. Results indicated that several measures of repetitive behaviour, particularly more complex high-level ones, were significantly positively associated with the probability of receiving a diagnosis of autism. No significant relationships were found between developmental age and the presence of repetitive behaviours in children with autism, but younger chronological age was associated more with simple or low-level repetitive behaviours.

Key words autism – early features – repetitive behaviours

Introduction

In an attempt to address the issue of early identification and diagnosis of autism in young children, there has been a research focus on early features of the disorder. However, studies examining the manifestations of restricted, repetitive and stereotyped behaviour in young children with autism have produced differing results [12].

Restricted, repetitive and stereotyped patterns of behaviour, interests and activities

The expression of the diagnostic criterion of repetitive behaviours is heterogeneous [4, 24]. Turner has therefore proposed that human repetitive behaviours can be divided into lower-level and higher-level behaviours [34]. Lower-level repetitive behaviours are characterised by repetition of movement including stereotyped movements, self-injury, tardative dyskinesia, tics and repetitive manipulation of objects. Higher-level repetitive behaviours include circumscribed interests, obsessions, compulsions, rigid adherence to routines and rituals, insistence of sameness and abnormal attachments to objects.

Turner proposed that lower-level repetitive behaviours may not be exclusive to autism [34]. Instead, they may be related to broader factors, such as level of cognitive ability or brain pathology. Turner also suggested that, although there are research inconsistencies, certain classes of higher-level repetitive behaviours such as circumscribed interests may signify Pervasive Developmental Disorders (PDDs) [10, 37]. However, some studies have indicated that the higher-level repetitive behaviours characteristic of autism may not become evident until a particular developmental level is achieved [17, 18, 31]. Identifying this diagnostic criterion of autism in young children may consequently be problematic.
DIAGNOSTIC ISSUES IN YOUNG CHILDREN AND INFANTS WITH AUTISM

The average age of diagnosis of autism is 6 years [14, 21]. Earlier diagnosis is preferable because children beginning intervention between the ages of 2 and 4 years are more likely to achieve developmental progress [20].

The diagnosis of autism in a young child is challenging as their symptoms may be more restricted in comparison to an older child [5, 29]. The levels of language and cognitive maturity necessary to identify whether particular symptoms of autism are present may be lacking in younger children. Consequently, not all criteria may be able to be assessed in very young children [10, 29, 35]. Nevertheless, there is evidence that a stable and reliable diagnosis of autism can be made in children aged less than 3 years, although the expression of repetitive behaviour is highly variable [31].

A diagnostic issue relating to repetitive behaviour in autism is the difficulty in differentiating it from normal early development. Sallusto and Atwell’s observations of normally developing children indicated that rhythmic behaviours are common in infants [25]. Research conducted by Thelen reported that a variety of rhythmic and stereotyped behaviours are frequently performed by normal infants within their first year of life [33]. It was suggested that these behaviours are manifestations of “incomplete cortical control in maturing neuromuscular pathways” correlated with motor skill acquisition [33, p. 699].

Research indicates that frequencies of compulsive-like behaviour fluctuate in normally developing children aged between 2 and 4 years [9]. This behaviour may include an insistence on sameness, such as always wanting to read the same book. As early as 1928, Gesell proposed that these ritualistic, repetitive behaviours might have an adaptive purpose, helping individuals to deal with environmental change [11].

Another challenge to early diagnosis is differentiating the features of autism and intellectual disability or developmental delay. Because 70–80% of people with autism also have an intellectual disability [3, 37], Lord has suggested that, in diagnosis, the behavioural features of autism must be differentiated from those due to developmental delay [15]. The symptoms of autism can be difficult to distinguish from behavioural features of developmental delay and may account for a delay in the diagnosis of autism [18, 23]. It is, therefore, essential that research examining the early diagnosis of autism compares children with autism to those with developmental delay who do not have autism in order to identify symptoms that are specific to autism.

EARLY IDENTIFYING FEATURES OF AUTISM IN YOUNG CHILDREN

Impairments in social and communication skills are probably the most reliable early features of autism in children under 48 months of age [2, 27, 31]. In children under 4 years of age, impairments in communication, social interaction, play, and imitation differentiate children with autism from children with developmental delay without autism [7, 30].

Repetitive behaviour is reported to have a later onset in comparison to impairments in social interaction and communication, probably as a function of developmental level [12, 27, 31]. However, repetitive behaviour in children under 3 years of age is inconsistently expressed. Therefore, some argue that it may not be a reliable differentiating feature of autism at this age [5, 12, 31]. In agreement with these findings, a number of studies of children aged under 36 months have reported that repetitive behaviour did not differentiate subjects with autism from those without [7, 13, 36]. Osterling et al. found that, although repetitive behaviour distinguished infants with autism from normally developing infants at one year of age, repetitive behaviour did not discriminate infants with autism from developmentally delayed infants of the same age [19]. This finding suggests that repetitive behaviour is more likely to be a symptom of developmental delay than autism specifically in children younger than 3 years.

However, studies using experimental measures encompassing both higher- and lower-level repetitive behaviour (i.e. algorithm and non-algorithm items of the Autism Diagnostic Interview-Revised and the Infant Behavioral Summarised Evaluation) have found a range of repetitive behaviours (both higher- and lower-level) to differentiate children with autism who are older than 3 years, taking developmental level into account [1, 17, 18]. These findings suggest that repetitive behaviour is a reliable diagnostic feature of autism in children older than 3 years.

Evidence that the expression of repetitive behaviours may occur as a function of developmental progression is reported by Cox et al. [6]. Comparisons were made at 20 and 42 months of age between 8 children with autism, 13 with other PDDs, 9 with language delay and 15 who were developing normally. Although repetitive behaviours did not significantly distinguish subjects with autism from the other groups at either 20 or 42 months, more subjects with autism or other PDDs were displaying repetitive behaviours at 42 months of age. These behaviours included hand, finger, and complex body mannerisms and repetitive use of objects.

The current study examined whether repetitive behaviours are a feature of autism in children aged less than 51 months, independent of developmental level, by investigating the relationship between chronological age, developmental age and the presence of repetitive