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Double trouble? Movement behaviour and psychiatric conditions in children: An opportunity for treatment and development

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ABSTRACT

Children with neurodevelopmental disorders often show problems in movement behaviour. Clinical motor features such as clumsiness, odd postures, hyperactivity and tics occur frequently in children with psychiatric conditions. Most dance/movement therapists recognize these, and consequently tailor treatment to the abilities of their clients. In view of treatment strategies, it is important to know which motor features are associated with which psychiatric conditions, and how movement problems be influenced by movement interventions. Therefore, this article focuses on clinical movement features, gross motor problems, neurodevelopmental aspects and movement interventions for children with emotional, behavioural and autism spectrum disorders.

Movement behaviour in psychology and psychiatry

As psychology grew out of philosophy, the Platonic undervaluation of the body compared to the mind and the Cartesian body–mind dualism in Western philosophy contributed to the idea that psychology should be concerned first and foremost with mental phenomena. Consequently, movement and motor control have been and continue to be neglected by mainstream psychology, even up till now (Rosenbaum, 2005). Recently, however, psychologists have started to acknowledge the relevance of the fact that people interact with the environment through movement and that they learn about themselves and their world by moving in it. In the words of Rosenbaum (2005, p. 313): 'motor control [. . .] lies at the heart of the science of mental life and behaviour because it joins the two' (Rosenbaum, 2005, p. 313).

Like in general psychology, the same undervaluing of movement behaviour has been noticeable in general psychiatry. Psychomotor abnormalities are predominantly viewed as mere epiphenomena, and even when they are deemed of clinical significance, little information is provided on this topic in psychiatric textbooks. Motor abnormalities do receive attention in psychiatry as far as they concern side-effects of pharmacotherapy. According to Gillberg and Kadesjö (2003), few psychiatrists are aware of the specific motor problems that are often comorbid with psychiatric disorders. Exceptions to this general picture include motor retardation as a feature of major depressive disorders (see Sobin & Sackeim, 1997) and as a negative symptom in schizophrenia (Röhricht & Priebe, 2006).

Movement behaviour in developmental perspective

Interestingly, in developmental psychology and child psychiatry movement behaviour has since long been a focus of attention. It is Darwin who seems to have set the stage in this respect. After having demonstrated, in his famous "The expression of emotions in man and animals" (1872), the intrinsic relations between emotion and bodily movements, he offered a detailed description of movements and motor responses to various conditions of stimulation, based on his day-to-day notebook of his oldest child (Darwin, 1877). One of the most famous researchers in developmental psychology who went beyond the body–mind dualism was Piaget (1952). He claimed that in the sensorimotor stage of development children gain knowledge of their surroundings through physical exploration. That is, mental development is dependent on perception and movement, and cannot be understood as an isolated, internal phenomenon. Along similar lines, it has been argued that motor performance is essential for children as they actively explore their world, thereby developing themselves and their skills in a continuous interactive process, in which each new skill opens new opportunities for a child to engage in new activities and interactions (Bernstein, 1967; Gibson, 1988; Thelen, 2000).

Moreover, psychologists started to recognize that motor performance is not only important during the first years of development, but that its impact continues well into the school age period. During

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this period children engage in new activities, increase their action radius and broaden their horizon beyond the primary family environment. Especially gross motor skills, such as running, jumping, catching and throwing balls become important, as they are essential for participating in games and plays with peers (Wall, 2004). Unsurprisingly, children with impaired gross motor skills are now known to be at risk for a range of physical, psychosocial and psychiatric problems such as poor self-concept, lack of social support, and anxiety (Dewey, Kaplan, Crawford, & Wilson, 2002; Piek, Baynam, & Barrett, 2006; Skinner & Piek, 2001; Smyth & Anderson, 2000; Wrotniak, Epstein, Dorn, Jones, & Kondilis, 2006).

In child psychiatry, movement behaviours have received due attention as potentially relevant clinical features. Rutter, Taylor, and Hersov (2004) pointed to several significant motor abnormalities, i.e. restlessness, fluttering, fidgeting, hyperactivity, walking on tiptoes, motor excitement, motor slowness, motor stereotypes, tics, mannerisms, head banging, self-biting, catatonic states, and medication-induced movement disorders, such as tremors and tardive dyskinesia. Particularly for autism spectrum disorders (ASD) psychomotor features, such as ill-coordinated movements and odd postures, have since long been a focus of clinical interest. For instance, the importance of clumsiness as a clinical feature has been a matter of debate since the first description of Asperger syndrome in 1944 (Ghaziuddin, Tsai, & Ghaziuddin, 1992; Ozonoff et al., 2008; Wing, 1981). Clumsiness may occur in a variety of other child psychiatric conditions, such as in attention deficit/hyperactivity disorder (ADHD) and in anxiety disorders (see for instance Erez, Gordon, Sever, Sadeh, & Mintz, 2004; Fliers et al., 2009), and gross motor impairments in children have been suggested to be phenotypic indicators for future schizophrenic disorders (Erlenmeyer-Kimling et al., 2000). Furthermore, in view of the growing awareness that child psychiatric disorders often co-exist and symptoms are shared across disorders, Gillberg (2010) stated that the investigation of motor abnormalities should be an integral part of the (neuropsychological) clinical examination of all young children who are presented with behavioural or emotional problems in clinical settings.

At present, neurodevelopmental perspectives dominate in child psychiatry. Child psychiatric symptoms and disorders are largely explained by abnormalities in brain functioning, either globally, i.e. there are impairments in the functioning of the brain as a whole, or locally, i.e. a particular brain region is not functioning optimally. As these neurobiological impairments occur in childhood when the brain is still developing and connections between brain regions are still evolving, the outcome on a behavioural level is unsure. As stated by Denckla (2003), "the brain is an organ that is sculpted at every level by experiences, including education" (p. 387). As a consequence, neurodevelopmental perspectives on child psychiatry incorporate motor functioning as a relevant diagnostic domain.

Clinical movement observation

During the mid-20th century, movement- and body-oriented therapies came to the fore. Several forms of such therapies were introduced, all sharing the basic idea that movement, physical exercise and bodily experiences might be employed as therapeutic means to alleviate psychological and psychiatric problems. These approaches stem from different traditions. For instance, in the USA and the UK the development of movement therapy rooted in modern dance as a performing art and the first movement therapists were often dancers themselves (Röhricht, 2009; van Wieringen, 1997). Today the Kestenberg Movement Profile (KMP), which is strongly influenced by Laban's notions, is frequently used to obtain diagnostic information for clinical populations (Cruz & Berrol, 2004; Loman & Merman, 1996; Payne, 2006).

In contrast to the USA and the UK, movement observation in continental Western-European psychiatry grew out of physical education, as teachers were assigned to activate psychiatric patients by means of offering games, gymnastics, dance, and sports (Probst & Bosscher, 2001). In Germany, Ernst Kiphard, a sports teacher and originator of the 'Psychomotorische Übungsbehandlung', introduced the 'Trampolin-Körperkoordinations-Test' and later the 'Hamm-Marburger Körperkoordinationstest' for clinical purposes in child psychiatry (Kiphard & Schilling, 1970). In the Netherlands and Flanders, the first attempts to systematically investigate movement characteristics of psychiatric patients arose during the 50s and 60s (van Roozendaal, 1957, 1973). Based on phenomenological traditions, particularly on the work of Merleau-Ponty (1945) and Buytendijk (1948, 1963), van Roozendaal developed a method of systematic movement observation in clinical psychiatry. Later, Simons built on the work of van Roozendaal to develop the Louvain Observation Scales for Psychomotor Therapy, which were widely used in psychiatric practice in Belgium (Simons, Van Coppenolle, Pierloot, & Wauters, 1989).

Thus, although clinical movement observation of psychiatric patients is rooted in different traditions, throughout the Western world movement behaviour is accepted by therapists as a clinically significant feature. Yet, it seems that scientifically valid knowledge about which movement features are associated with which psychiatric conditions, and, to what extend movement problems can be influenced by interventions, is still scarce. Given the importance of movement behaviour in developmental perspective, this article focuses on children. Therefore, the movement characteristics of three groups of children with psychiatric disorders will be discussed next.

Movement characteristics of children with psychiatric disorders

In line with epidemiological psychiatric research and clinical care programmes three broadly defined categories of psychiatric disorders in children can be are distinguished: emotional disorders, behavioural disorders, and autism spectrum disorders (Egger & Angold, 2006). Not only are these disorders likely to have distinct neurological and neurobiological substrates, they also typically demand different treatment strategies, tailored of course to individual characteristics and symptoms (Emck, Bosscher, Beek, & Doreleijers, 2009).

Children with *emotional disorders* are characterized primarily by symptoms of depression and anxiety. On a syndrome level, Achenbach (1991) refers to these as internalizing problems. Although in DSM-IV anxiety disorders and mood disorders are defined separately, they are here grouped because of the high level of comorbidity of these disorders and the strong heterotypic continuity of depression and anxiety (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003).

The clinical features of mood and anxiety disorders include several body- and movement-related aspects. Anxiety disorders in children are associated with psychophysiological symptoms, such as shortness of breath and high muscle tension, which directly affect the child's movement behaviour. Children with anxiety disorders engage less often in physical activity, and their play behaviour is characterized by withdrawal and diminished enjoyment (APA, 1994; Kirkcaldy, Shephard, & Siefen, 2002; Klein, 1994; Sadock & Sadock, 2003). Trauma-related anxiety is associated with problematic body experiences, such as pain and feelings of discomfort, that contribute to a negative body image and problems with moving and playing (Lamers-Winkelman, 1997; Sadock & Sadock, 2003). Depression in children is associated with somatic complaints such as abdominal pains, fatigue, reduced ability to experience pleasure,