Correspondence:
Dr Sheila E. Henderson
Department of Psychology and Special Needs
Institute of Education
University of London
25 Woburn Square
London WC1H 0AA
UK.

Clumsiness, Dyspraxia and Developmental Co-ordination Disorder: how do health and educational professionals in the UK define the terms?

JM Peters,*† AL Barnett* and SE Henderson*

*Psychology and Special Needs, Institute of Education, University of London and †Physiotherapy Department, Great Ormond Street Hospital for Children NHS Trust, Great Ormond Street, London, UK

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Summary

At the turn of the century, the idea that there might be a discrete childhood syndrome, which had ‘clumsiness’ of movement as its defining symptom, began to emerge. Since then numerous labels have been applied to the syndrome. In spite of recent attempts to standardise the terminology used, variation continues to compromise inter-professional communication and interpretation of research. The aim of this study was to determine how the three terms ‘Clumsy’, ‘Dyspraxia’ and ‘Developmental Co-ordination Disorder (DCD)’ are viewed by health and educational professionals in the UK. Two hundred and thirty-four adults (57% from the health professions and 43% from education) provided a written definition of each term. Content analysis of the 702 definitions was used to determine: (1) the extent to which the terms were familiar/acceptable to the respondents; and (2) to capture differences in the meaning of the term being defined. The results indicated that the terms ‘DCD’ and ‘Dyspraxia’ were less familiar than the term ‘clumsy’ which was, however, least acceptable. Amongst those professionals who were familiar with all three terms, there was general agreement that all were used to describe some sort of overall movement difficulty. Beyond that point, divergence of understanding and inter-professional differences in emphasis emerged. The implications of these differences for clinical and educational practice, research and policy making are discussed.
**Keywords:** clumsy, Dyspraxia, Developmental Co-ordination Disorder (DCD), terminology, inter-professional differences

**Introduction**

Since the turn of the century, the idea of a discrete childhood syndrome which has ‘clumsiness’ of movement as its defining symptom, has gained ground (Dupré 1909; Orton 1937; Strauss & Lehtinen 1947; Walton *et al.* 1962; Gubbay 1975; Denckla 1984; Henderson 1992). Recognition of this syndrome is currently confined to the developed world with estimates of prevalence averaging around 5% (Fox & Polatajko 1994).

Recent reviews of the various labels applied to this disorder have drawn attention to confusion in the present use of terms (Henderson & Barnett 1998; Polatajko 1999). For some professionals, different diagnostic labels seem to be used interchangeably. For others, the different labels are used to refer to slightly different conditions and may be coloured by the particular background of the user (Missiuna & Polatajko 1995). With the increase in multidisciplinary approaches to working with children, the need for a clear and incisive language of communication becomes vital.

The present study examines the current use of three terms, ‘Clumsy’, ‘Dyspraxia’ and ‘Developmental Co-ordination Disorder (DCD)’, by professionals in the UK. The first of these terms was chosen on the grounds of historical precedence and common descriptive usage (Gordon & McKinley 1980). The second was employed because of its roots in medical parlance and its adoption by the Dyspraxia Foundation, the parent lobby now active in the UK. This group provides an unusually broad definition of the term:

> An impairment or immaturity of the organisation of movement. Associated with this there may be problems of language, perception and thought (Dyspraxia Foundation 1997).

For a term with official ‘blessing’, we chose ‘DCD’ from DSM IV (American Psychiatric Association 1994) rather than ‘Specific Developmental Disorder of Motor Function’ (SDDMF) from ICD 10 (World Health Organisation 1992), as the former is much more commonly used by researchers around the world (Fox & Polatajko 1994; Barnett *et al.* 1998). Both DSM IV and ICD 10 define the disorder in terms of a marked impairment in the development of motor co-ordination that is not explicable in terms of a general intel-
lectual retardation or of any specific congenital or acquired neurological disorder.

Specifically, our aims were: (1) to compare and contrast different professionals’ familiarity with the three terms and the extent to which they found them acceptable; and (2) to characterise any systematic similarities and differences in the perceptions of each term. Definitions of the three terms were collected using a self-administered, free-response method, which offers participants freedom to express their ideas. Although analysis of data produced by this technique is time-consuming, it has the advantage of capturing the full richness of the content (Glaser & Strauss 1967; Oppenheim 1992).

Method

Participants

The 234 professionals taking part in this study were a convenience sample from health (57%) and education (43%) attending meetings or courses across the UK. None of the meetings assumed any prior knowledge of the subject of interest in the present study.

Procedure

Response sheets were distributed to participants by the first author and three colleagues. Respondents then wrote down their own definition of each of the three terms, in the presence of the researcher, without consultation. Professional status was recorded and the form returned immediately.

Development of the coding frame

Table 1 shows typical examples of the responses obtained for each of the three definitions.

In order to capture the variation in the content of the 702 definitions provided, it was necessary to develop a reliable coding frame. This was done using the technique of content analysis recommended in Oppenheim (1992), which involves the sequential checking and re-checking of a category system until coding agreements are maximised and disagreements minimised. Professionals from four different disciplines took part in this process. The final version
of the 26 category coding frame is shown in Table 2. Inter-rater and test–retest reliability checks on this version yielded identical percentage agreement values of 85%.

**Results**

Of the 234 professionals in the sample, 133 were from health, mostly paediatric specialists. The proportion of doctors was 32%, of occupational therapists (OTs) 38%, physiotherapists (PTs) 22% and speech and language therapists (SALTs) 9%. The educational professionals comprised 101 teachers from a mix of primary, secondary, special and mainstream schools.

**Familiarity and acceptability of the terms**

Respondents varied in the extent to which they were familiar with the terms. Whereas no one failed to provide some sort of definition of the term ‘Clumsy’, 7% of respondents were unfamiliar with ‘Dyspraxia’ and 32% with ‘DCD’.

All therapists, regardless of profession, were familiar with the term ‘Dyspraxia’. Of the 17 respondents who failed to offer a definition for the term all but two were teachers. A further 12 teachers also confused ‘Dyspraxia’ and ‘Dyslexia’: e.g. ‘Similar to dyslexia but I can’t remember the difference’; ‘A physical version of dyslexia’.

With regard to ‘DCD’, 74 professionals were unable to offer a definition. OTs stood out as being most knowledgeable (only two failed to provide a definition). Nine participants, all therapists, knew that ‘DCD’ was the term

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**Table 1** Two examples of responses

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| 1. | Clumsy: General term for a mildly unco-ordinated child who often bumps into people, trips, drops things and has poor motor control
Dyspraxia: Motor planning disorder of neurological origin in the absence of muscle weakness. May affect oral motor skills and therefore speech as well as fine and gross motor skills
DCD: No idea |
| 2. | Clumsy: Mild co-ordination problem, ‘cack-handed’
Dyspraxia: Difficulty in planning, organising and carrying out activities. Includes co-ordination, sequencing and perceptual difficulties
DVD: As dyspraxia |
selected by the American Psychiatric Association for its official publication. Lack of knowledge of the term was similar for teachers, doctors and PTs (37%, 36% and 31%, respectively).

The term ‘Clumsy’ was castigated as: ‘rather an old-fashioned term, largely replaced by dyspraxia’; and as ‘a lay term’. Seventeen respondents eschewed its use: ‘Not a term I use–prefer to use motor learning difficulties’; and ‘The term “clumsy” . . . should not be used as a clinical term these days’. Ten others were opposed to the term ‘DCD’; e.g. ‘I personally use dyspraxic term’.

Lack of precision was referred to in a number of entries. For example, the term ‘Clumsy’ was perceived as encompassing movement within the normal range: e.g. ‘Just a bit awkward . . . can be a normal person!’ Similarly, an OT considered the term ‘dyspraxia’ to be used imprecisely:
‘This term is often used by health professionals to describe general motor learning difficulties whereas it should be used in a more discriminative way, i.e. dyspraxia on verbal command etc.’

Definitions, similarities and differences

Sixty per cent of respondents provided a definition for each term. Of these, 11% indicated that all three were synonymous. Another 11% indicated that two were synonymous, usually ‘DCD’ and ‘Dyspraxia’ (7%).

Some of the perceived differences between the terms seemed to be the product of key professional constructs. Of ‘Dyspraxia’, for example, a doctor wrote:

Difficulty with fine motor control in the absence of paresis of the muscles involved in execution of the relevant movement.

Whereas a PT wrote: ‘Co-ordination disorder often linked with proximal hypotonia’; and an OT wrote: ‘a diagnosis within sensory-integrative disorder where the tactile and proprioceptive systems are underactive’. Similarly, the teachers’ concern with the classroom could be seen in the definitions: ‘Difficulty forming letters’; or ‘Mixing letters around the wrong way in words’.

The ‘core’ elements of the definitions

When the 91 failures to provide a definition were discarded, a total of 611 definitions remained. The content of these was then analysed with reference to the 12 categories in the Coding Scheme listed as representing the ‘core’ motor elements of the conditions (see Table 2).

The percentage of definitions that embraced fine motor difficulties scarcely differed across terms (‘Clumsy’, 21%; ‘Dyspraxia’, 18%; ‘DCD’, 21%). In contrast, for gross motor difficulties, the percentages were noticeably higher for the terms ‘Clumsy’ (71%) and ‘DCD’ (64%) than for ‘Dyspraxia’ (42%).

There were surprisingly few mentions of difficulties with activities of daily living for any of the terms (< 10 in each case). For the ‘accidents’ category, the number of references to the term ‘Clumsy’ (33%) was substantially higher than for either of the other two (4% in each case).

There was rather little variation in the number of references to control parameters, such as the force, timing, speed and accuracy of movement. The term ‘Clumsy’ attracted 11%, ‘Dyspraxia’, 22% and ‘DCD’, 14%. The phrases ‘uncoordinated movement, not smooth and free flowing’ (‘Clumsy’); ‘difficulty
making conscious controlled movements’ (‘Dyspraxia’); ‘poor co-ordination in term of poor motor control (not poor planning)’ (‘DCD’); illustrate the similarities between participants’ views of each term. In contrast, the proportion of statements referring to motor planning was substantially greater for ‘Dyspraxia’ (43%) than for the other two terms (6% and 11%, respectively). Of the term ‘Dyspraxia’, one respondent wrote: ‘Unable to do what you want when you want, but then you can do it when you don’t think about it.’

Sensory, perceptual or spatial difficulties were mentioned for all three terms. Sometimes, a single modality was specified, e.g.: ‘poor visuo-perceptual skills’; ‘tactile and proprioceptive systems are underactive.’ At other times, the integration of sensory and motor information was highlighted: ‘difficulty integrating sensory information’. A number of respondents, mostly teachers, made statements which seemed to link perceptual and/or spatial problems to difficulties with handwriting.

The term ‘Dyspraxia’ included 31 references to communication problems, e.g. ‘hears and understands language but cannot connect it to their own oral signals’; whereas fewer than four references were made for either ‘Clumsy’ or ‘DCD’. The three remaining categories covering lack of strength, etc., laterality, and brain–body links were referred to infrequently throughout (10, 3 and 14 references, respectively). Among the 14 references to a brain–body link one participant wrote: ‘Where the connections between the brain and body don’t work . . . can do things from a motor point of view and a brain point of view but not together’; ‘An autistic type of disorder where body and mind fail to communicate’.

Severity also distinguished between the terms, being mentioned in connection with Dyspraxia much more often than with clumsiness; e.g. ‘More pronounced than “clumsy”’. Similarly, no one described ‘Clumsy’ as a medical term, whereas ‘Dyspraxia’ and ‘DCD’ were perceived as associated with a medical condition by around 10% of respondents. Of ‘Dyspraxia’, one respondent wrote: ‘A pathological state, congenital or acquired, whereby the subject cannot access fully established motor routines . . .’

Associated problems

All three terms attracted comments in all four categories listed under the heading ‘associated problems’ in our coding frame (see Table 2). Within the category, academic, ‘Dyspraxia’ attracted 15% of responses compared to less that 6% for either ‘Clumsy’ or ‘DCD’. The percentages of statements did not vary appreciably across any of the other terms or categories (cognitive and
emotional/social < 5% and behavioural < 10%). The nature of the comments made suggested that the term ‘Dyspraxia’ was perceived as being broader and more complex than the other two. For example, ‘Dyspraxia’ was described as: ‘Associated with other specific developmental problems’; ‘A child who is “clumsy” but also has other traits which affect learning issues’; ‘Linked usually with . . . spelling difficulties, etc.’

References to cognitive functioning varied in both content and style. For example, the phrase ‘piece of behaviour which could have been avoided with forethought’ (a propos ‘Clumsy’) seems to imply that the clumsiness of movement in itself might be caused by failure to plan at a cognitive level. This contrasted sharply with more global references to a discrepancy between cognitive and motor development as when one respondent referred to ‘Dyspraxia’ as ‘a significant discrepancy (> 20 points) on verbal/performance skills’. Another wrote of ‘DCD’: ‘acquisition of functional movement out of line with cognitive potential’.

Frequency of reference to behavioural problems appeared to be inversely related to their perceived severity. For instance, many of the words and phrases used to define the term ‘Clumsy’ seemed to refer to a relatively minor degree of inattention or carelessness: ‘a bit scatty’; ‘may be thought slapdash’; ‘due to inattention or carelessness”; ‘the class/family clown.’ In contrast, the term ‘Dyspraxia’ attracted phrases like: ‘noncompliance’; ‘behaviour difficulties’; ‘disruptive’; ‘anxious’; and ‘poor self-esteem’.

Emotional/social aspects were mentioned infrequently for any term (< 5%). However, once again, remarks relating to ‘Dyspraxia’ or ‘DCD’ implied greater severity than those included under definitions of clumsiness. Of the few comments related to academic attainment or schoolwork, the majority occurred within definitions of ‘Dyspraxia’

**Discussion**

Many professionals find discussions about terminology tedious. ‘What does it matter what we call them, as long as we describe the problem clearly and can do something about it?’ However, the choice of labels has important implications for both theory and practice in the fields of health and education (Warnock 1978; Davies 1994; Gardner-Medwin 1995; Bax 1999; Hart 1999). At a theoretical level, confusion about terms and their definitions can frustrate scientific research by leading to inadequate and inconsistent criteria for defining samples and thence to difficulty in comparing one study with another.
At a more practical level, we are all familiar with the arguments for and against giving children labels which signify that they are in some way different from the ‘norm’. On the positive side, a condition defined in a certain way may confer special entitlement to benefits and services. On the negative side, a label may be difficult to shed, even when the child has changed for the better.

Clarity about terminology also matters in relation to the collection of statistics, which inform policymaking, nationally and internationally. The advent of Clinical Governance and evidenced-based practice in the UK (Department for Education 1994; McKinley 1996; Department of Health 1999) has highlighted the need for a nationally standardised system of classification. A collaborative project between the USA and UK has the even more ambitious objective of producing a ‘standardised healthcare language throughout the English speaking world’ (Department of Health 1999).

In the present study, our objective was to determine how professionals currently practising in the health and education services in the UK perceived three terms which have been used to refer to children with a ‘specific’ difficulty in the movement domain. As Rutter (1998; p. ix) points out:

It has been recognised for a long time that severe and persistent difficulties in spoken language, reading, spelling and motor co-ordination, not infrequently occur in children of normal intelligence, without any obvious neurological disorder, from an unremarkable family background, and who have had apparently adequate schooling and other educational experiences.

Since the first descriptions of such children appeared at the beginning of the century, debate about how to label and classify them has continued unabated (e.g. Bax & Mackeith 1963; Warnock Report 1978; Rispens et al. 1998).

Awareness and attitude

Most professionals participating in this study worked with children, but variation in discipline and experience was considerable. Consequently, the results we obtained should be generalisable to all health and education professionals currently working with children in the UK.

Awareness of a term is one thing and knowledge of its meaning quite another. Like Missiuna and Polatajko (1995), we found that many respondents perceived two and sometimes all three terms as interchangeable. Such a view might
have been the product of a careful appraisal of the literature. However, in most cases, the statements we obtained suggested that respondents were simply guessing.

Perhaps not surprisingly, the term ‘Clumsy’ was the only term defined by all respondents. However, many expressed the view that it was no longer acceptable as a formal label for children with motor difficulties. As Miyahara and Register (2000) found in a similar survey in New Zealand, most criticisms were directed at the vagueness of the term and its derogatory connotations.

In spite of a spate of texts written specially for teachers (e.g. Portwood 1996; Ripley et al. 1997; Sugden & Wright 1998), plus a series of campaigns by the Dyspraxia Foundation, teachers in our sample seemed far less knowledgeable about the term Dyspraxia than their medical counterparts. However, the knowledge base of any profession is likely to be a reflection of their training and attitudes to a problem. In the past, teachers were rather poorly informed about the links between movement difficulties and failure to make progress in school and did not see children with movement difficulties as their responsibility. Although perceptions have changed over the last decade, many educationalists continue to worry that lack of co-ordination is a ‘medical’ condition, which requires medical intervention.

A startling aspect of the results was the prevalence of confusion amongst teachers between ‘Dyspraxia’ and ‘Dyslexia’. Some believed dyspraxia to be ‘another form of dyslexia’ or ‘a dyslexia of gross motor function’. In many cases, however, all that one could gather was that the respondent simply viewed dyslexia and dyspraxia as sharing membership of a fuzzy, but detrimental, set of educational difficulties.

In spite of its world-wide adoption by the research community (Barnett et al. 1998; Fox & Polatajko 1994) only a few professionals, all of them therapists, were aware of the origins of the term ‘DCD’ and none referred to the WHO alternative, ‘Specific Developmental Disorder of Motor Function’. Since the NHS has recently decided to adopt the latter in its recording systems, this is likely to cause considerable confusion.

**Perceived Similarities and differences between the terms**

We found that all three terms were regarded as: (1) referring to movements or actions that were not smoothly performed; (2) including both gross and fine motor difficulties; and (3) as applying to children whose difficulties extended into other domains of behaviour. There was also agreement that the term ‘Clumsy’ referred to a milder condition than ‘Dyspraxia’ or ‘DCD’. Accord-
ingly, ‘Clumsiness’, unlike ‘Dyspraxia’ or ‘DCD’ was never referred to as pathological. Without exception, these similarities were perceived by representatives of all professions.

Teachers, doctors and therapists, play very different roles in the identification and treatment of children with movement difficulties. Perhaps not surprisingly therefore different professions emphasised different elements of the movement difficulties such children experience. For instance, most comments on handwriting difficulties were made by teachers and were spread evenly across the three terms. In contrast, the majority of references to articulatory deficits and their effect on communication were linked to the term ‘Dyspraxia’ and were made by Speech and Language therapists. Surprisingly, references to activities of daily living were extremely infrequent. Yet, in our own experience, problems with dressing, undressing, eating, etc. are high on the list of parents’ concerns.

Differences in how the three terms were perceived could also be attributed to the individual’s knowledge base. The best examples of this kind of bias were found among definitions of ‘Dyspraxia’. These appeared to stem from the familiarity of different professionals with the neurological or psychological literature on motor control, in which a central theme is the distinction between the planning and execution components of movement. This distinction was familiar to most therapists but was rarely mentioned by teachers. Statements linked ‘Dyspraxia’ to deficiencies in the planning of actions, but these varied considerably in meaning. Some used the term planning in quite a narrow sense, to refer to co-ordination of the components of a single purposive action. Others used it more broadly to refer to the organisation of a loosely connected series of actions.

A general problem in the study of human abnormality occurs when the purportedly neutral language in which syndromes are labelled becomes saturated with theoretical presuppositions. One example in this area, is the use of the term ‘sensory-integrative dysfunction’ to refer to children who have failed to acquire the motor skills expected of them. (Ayres 1972, 1989; Fisher et al. 1991). This label enjoys currency amongst occupational therapists in the UK, some even preferring it to the terms used in this study. As a label, ‘sensory-integrative dysfunction’ carries with it presuppositions about the nature of the disorder and the appropriate form of assessment and remediation (Ayres 1989). Moreover, other professionals very seldom use the term even when referring to the same children. While such differences in perspective might be understandable within a research community, multiple terms are likely to confuse and mislead the parent or teacher unaware of the theoretical background.
Even the term ‘Clumsy’ was not without interpretative coloration, as it often carried with it the notion of actions conducted without due care and attention. Indeed, one respondent explicitly stated that the term ‘Clumsy’ was a label for those who ‘don’t concentrate on movement and actions’. Also, the number of references to having accidents, knocking things over, etc., was nearly 10 times higher for the term ‘Clumsy’, than for ‘Dyspraxia’ or ‘DCD’, suggesting that disability was not a causal factor in this case. This may be one reason why the word ‘Clumsy’ in ordinary discourse is used as an epithet for a culpable action more often than a medical condition. More importantly however, statements and beliefs of this kind remind us that there may still be children in our schools today whose genuine movement difficulties are misunderstood and attributed to perversity or carelessness.

Not only were ‘Dyspraxia’ and ‘DCD’ seen as more severe then clumsiness, these terms were also more likely to be linked with wider problems, such as attentional problems and low self-esteem. Almost all references to cognitive difficulties were associated with the term ‘Dyspraxia’. In spite of these variations, however, all three terms were perceived as being linked with difficulties in school.

In sum, this study has revealed systematic differences in how the three terms commonly used to describe children with ‘specific’ difficulties in the motor domain are perceived by British professionals in child health and education. Although it was accepted that the term ‘Clumsy’ is out of date and unacceptable, professionals in the UK showed no consensus on acceptable alternatives. The term ‘Dyspraxia’ is much more widely used in the UK than elsewhere. It is unfortunate therefore that the UK parent lobby, in their definition encompasses almost all of the ‘specific’ childhood disorders listed in the formal classification manuals!

References

Ayres, A. J. (1972) *Sensory Integration and Learning Disorders*, Western Psychological Services, Los Angeles, CA.


National Health Service Executive (1999) Clinical Governance, Quality in the new NHS. NHSE, Bristol.


