

Is stammering a complex tic?: New avenues for research

Patricia Sims

Independent Practice, Devon, UK



The role played by tension and anxiety in dysfluency has long been considered, albeit not in the context of commonplace childhood behaviour. When the personality traits of children referred to a speech and language clinic are comprehensively observed and examined, it appears that tension or anxiety is an underlying, unifying factor in a variety of developmental problems and conditions. Such an overall view gives insight into dysfluency and suggests that stammering is a complex tic. This paper seeks to argue this case.

Male:female ratios given by societies and support groups in the UK for the incidence of the major developmental problems and conditions were tabulated (Table 1). It was considered necessary to address the remarkable uniformity of the 3-4 : 1 ratio, there being but one curious anomaly in the Asperger syndrome. This uniformity strongly points to an underlying factor or factors. With detailed observations having been made of the behaviour and attributes of children referred for speech and language therapy, over a period in excess of 20 years, it was concluded that a factor is tension or anxiety and the manner in which it is expressed. An implication of this is that males have more tension than females. This seems a reasonable deduction when it is considered that men have needed to evolve as hunters, fighters and protectors and that male prisoners far outnumber females.

Table 1: Ratios given by UK societies and support groups.

	<i>Male : Female</i>
Stammering	3-4 : 1
Other speech and language difficulties	3 : 1
Tourette syndrome	3-4 : 1
Autism (Asperger syndrome not included)	4 : 1
Asperger syndrome	6-10 : 1
Hyperactivity/ADHD	3-4 : 1
Dyslexia	3-4 : 1
Dyspraxia	4 : 1

3. Is he easily frightened?
Does he become terrified of anything?
Is he anxious in an unfamiliar place?
Does he worry?
Does he panic?
4. Does he sleep well?
Does he want to sleep with his parents?
Is he frightened of the dark?
Does he mind being left on his own at night?
Does he have nightmares?
Does he sleepwalk?
Does he wake up in the night or very early in the morning?
5. Is he sensitive and easily hurt by criticism?
Does he sulk?
Is he very shy?
Is he weepy?

Figure 1. Extract from Personality Checklist.

In order to investigate the behaviour and attributes of the children a comprehensive Personality Checklist was devised and used (Sims, 2001). It consists of 30 groups of questions and extra questions for the schoolchild (totalling 259). An extract from the checklist is given in Figure 1. Questions consider all aspects of a child's development and behaviour and relate to fears, switched off behaviour, emotional and physical hyper- and hyposensitivity, attention deficits, distractibility and excitability, obsession and compulsion, and manifestation of tension and anxiety through speech and language. Professionals and carers become able to see how a child's behaviour can be related to tension. Tension and anxiety are normal attributes which are essential to us all and to our progress but even when they exist within the normal range¹, they can cause problems in development. Normal levels can be high.

While using the checklist it is borne in mind that some problems which are often deemed to have a physical origin may have an emotional component or cause. Research-

¹ For the purposes of this paper normal range implies that tension or anxiety is not overt and does not cause great concern.

Table 2. Traits and problems experienced by twelve unselected children.

<i>Child's age & language problem</i>	<i>Fearfulness/sensitivity</i>	<i>Repetitive behaviour</i>	<i>Switching off/avoidance/poor attention</i>	<i>Other</i>
2 yr 9 mth Slow speech and language development		Likes mother to say the same things		Exacting and stubborn
3 yr 2 mth Arrested development of speech and language	Cries when left at playschool; reticent			Some regression in development
3 yr 1 mth Jargon; poor comprehension; word and sound repetitions	Cries out for mother during night; poor sleeper	Rituals; repetitive questioning	May switch off and avoid	Day-time soiling; severe tantrums; fervent dummy sucking; fussy eating
6 yr 2 mth Delayed language	Very sensitive to criticism; frightened to go upstairs at night		Tends not to listen well when instructed; opts out	Marked tempers
3 yr 11 mth Hurried speech; lateralisation of sounds; use of silly voice; inappropriate word usage			Short attention span and distractible but can also seem preoccupied	Excitability; clumsiness; unusually large appetite
3 yr 2 mth Single words only – when willing	Sensitive to criticism and clingy	Orderly and very fussy; resistant to change; repeats words (not as in stammering)	Ignores people	Undetermined handedness; heightened reaction to sounds; occasional rocking
6 yr 6 mth Dysfluency; difficulty organising language	Frightened of noises; very sensitive; anxious questioning	Repetitive questioning	Rather poor eye contact and involvement	Bed-wetting; poor awareness of danger; slow and poor dressing
2 yr 4 mth No speech but has begun to make noises	Regularly terrified; nightmares; poor sleeper		Rather aloof; not very responsive	Outbursts of screaming; eczema; left-handed
5 yr 6 mth Delayed language; learning problems at school		Repetitive 'naughty' behaviour and some rigidity in thinking	May avoid	Egocentricity and some lack of empathy
4 yr 0 mth Delayed language; selective mutism; some intentional lack of clarity	Calls out for mother during night; anxious questioning	Repetitive speech and some ritualistic behaviour	"Trance-like" switching off; avoidance	Marked tantrums; unusually observant; walks about holding comforter; fussy eater; left-handed
10 yr 0 mth Verbal comprehension, expressive, literacy and memory difficulties	Very reticent; panic attacks; night-time anxieties			Fidgety and restless; ?depression
6 yr 7 mth Literacy problems; disordered language	Very sensitive to criticism		"Dreams"	Notes tiny changes to surroundings; asks questions about the day's agenda; bed-wetting; clumsiness; keen thumb-sucking
TOTALS	9 (75%)	6 (50%)	9 (75%)	12 (100%)

ers have drawn attention to the role played by tension and anxiety in temperature regulation, appetite and weight (Adzhimolaev *et al.*, 1989); joint hypermobility syndrome (Bulbena *et al.*, 1993); allergy (Agarwal & Sethi, 1978); strabismus (Douche *et al.*, 1990) and seizures in children and adolescents (Lancman *et al.*, 1994). Moreover, the early programming of co-ordination difficulties might be assisted by tension, inattention, poor awareness and impulsiveness, as could be a slowness to develop handedness and hand control.

Table 2 summarises some traits and problems experienced by twelve children who were assessed at a general clinic in order of referral or re-referral; no selection was made. It illustrates the prevalence of traits. Notable levels of repetitive behaviour were registered in half the cases. Three-quarters of the children exhibited fears or sensitive feelings. As expected, all the children had some tension or anxiety-related traits; even children without any marked problems might be expected to have a few, albeit perhaps in small measures, since they are a part of normal behaviour.

Use of the checklist leads to an acknowledgement that in the developmental problems and conditions shown in Table 1, abnormality is an exaggeration of normal behaviour. Its use also shows that the various traits which can be related to tension or anxiety overlap in an apparently haphazard manner throughout the various conditions, and that our diagnosis of a problem depends upon the dominance of some of these traits over others and the extent to which they are problematic. Signs or symptoms of conditions, as given by societies and support groups, can be seen to be tension or anxiety-related traits or secondary traits (Sims, 2002). That some traits precede the problems suggests that the tension does not merely result from the problems themselves. Sims examines the role played in the development of speech and language by traits which can be related to tension or anxiety. Tension, fears, liking for sameness, switching off or failure to switch in, voluntary and involuntary shutdown, repetitive behaviour, compulsion and obsession, obsessive avoidance, and programming and conditioning of behaviour all play their part in delayed, arrested or regressed speech, pedantic or literal comprehension and expression, limited comprehension, limited or poorly organised language, literacy problems, mumbling, mutism, vocal quality, repetitive speech and language, dyspraxia of speech, cluttering and stammering and disturbance of breathing while speaking.

Repetition, Compulsion and Tics

It is known that repetitive behaviour increases with stress and tension. The increased repetitive, ritualistic behaviour of some tennis players during critical moments of important matches serves as a recognisable illustration of this. Observation of personality traits shows that tense or anxious children can be repetitive in a variety of ways. They may seek sameness in wearing the same clothes, eating the same foods, walking in a particular way, being repetitive in their play or retaining idiosyncratic speech characteristics, for example. They may likewise use speech repetitively or keep asking the same questions in order to hear familiar, predictable responses. Sometimes they manipulate adults or other children in order to see a sequence of familiar events unfold. A variety of examples of repetitive and ritualistic behaviour in childhood is given in individual case studies in *Reasons and Remedies* (Sims, 2002).

It is possible for any behaviour to become repetitive and compulsive. Repetition and compulsion can lead to tension-related habit spasms, or tics, which can be transient or chronic. These take a variety of forms, such as eye blinking, head jerking, shoulder shrugging, grimacing, throat clearing, humming, repetitive coughing, yelping, tongue

clicking, sniffing, jumping, touching, smelling, twirling, self-harming, uttering words out of context and echoing utterances. The acts become programmed, although they might be controlled for a limited amount of time. Tourette Syndrome UK Association points out that typically, the tics are experienced as irresistible. They increase with tension or stress, and decrease with relaxation or concentration on an absorbing task. Problems that are often associated with tics are obsessive-compulsive and ritualistic behaviour; hyperactivity with or without Attention Deficit Disorder; learning difficulties; difficulties with impulse control and sleep disorders (Tourette Syndrome UK Association, 1997). These are all conditions which can be seen to be associated with or formed of tension or anxiety-related traits, when personality traits are comprehensively observed.

Stammering as a complex tic

Since children repeat in every conceivable manner, it would be totally surprising, and be a phenomenon worthy of investigation, if some did not repeat sounds, syllables and words. This is, of course, exactly how a developmental stammer begins. It is therefore important to consider stammering as originating in tension which promotes repetition (Sims, 1997). The tension and its manner of expression might be inherited, or environmentally driven, or of mixed origin. Often the repetitions coincide with an environmental factor triggering extra tension and anxiety. The repetitions can become compulsive and take the form of a tic which may become more complex in nature. The author offers this theory in the following form:

Tension, which may be within normal limits, causes a child to repeat sounds, syllables and words.

Simple repetitions of sounds, syllables and words become habitual, compulsive and eventually programmed -- as in tics.

The motor pathways receive conflicting messages: repeat versus continue. For example, if the child wishes to say "I want to go out in the garden", (i) the lips may be tensioned for the w in want (repeating want) while the tongue is trying to make the t of the next word to, or (ii) the lips may be tensioned for the w of want (repeating w) while the tongue is tensioned for the following a.

Resultant blocks are followed by struggles.

The behaviour becomes conditioned and triggered by feelings and circumstances and the stammering patterns reinforce themselves.

The build up and release of tension can become addictive, as indicated by some adults who stammer. (The author has been contacted by a gentleman who asked her why he and his sister both liked to stammer, in spite of also wishing to be rid of the problem).

Complex vocal tics include linguistically meaningful words, phrases, or sentences; for example, "Yep, that's it" (Bruun *et al.*, 1984). Such utterances are generally viewed in stammering as fillers which fill in gaps in time or speech, or as attempts to promote fluency, yet they may in some instances be tics. Other habits, such as blinking, are often displayed in stammering; such blinking may sometimes be a simple tic rather than a symptom of struggle. Bruun and her colleagues state that vocal symptoms in Tourette

Syndrome may interfere with the smooth flow of speech and resemble a stammer or other speech irregularity, and that they often occur at points of linguistic transition, such as at the beginning of a sentence or phrase where there may be blocking or difficulties in the initiation of speech. They point out that the sufferer may alter speech volume, slur a phrase, emphasise a word, or assume an accent. Such findings support the view that developmental stammering is a complex tic, since there is much overlapping of symptoms between the two behaviours.

Application of Theory to Treatment

In early childhood

The following steps to address stammering in young children are appropriate to this theory:

- a) reduction of tension by addressing any environmental factors which increase or sustain tense or anxious feelings (e.g. changes such as occur with the arrival of a new sibling, the unaccustomed absence of a parent, or joining a new group or class).
- b) inhibition of early repetitions before they lead to more complex behaviour
- c) provision of attention and adequate support with praise for fluent speech

Steps b) and c) form an essential part of the Lidcombe Programme (Onslow *et al.*, 1997).

In adulthood

In the author's experience, adults who stammer are able to address their problem more positively when they better understand its origin. Once they appreciate that the dysfluency arises from normal, early childhood tension, they are released from the impression that they are afflicted with a problem which is largely beyond their control. It is reassuring and empowering to realise that while some children might erupt in tempers, eat voraciously, sleep poorly, head-bang, be very fussy, or suck their thumbs repetitively and ardently, others will repeat sounds and words. It is simply unfortunate that the repetition of sounds, syllables and words has more scope for development and complication than most other tension-related traits.

Further, it is important for adults who stammer to think about their present levels of tension and also to ask themselves whether they enjoy the release of tension in stammering. They may need to consider how motivated they are to lose their stammers.

Considerations and Research

The theory raises a number of considerations:

The role of a child's inherent tension or anxiety appears to be an important one; some traits are manifest very early on in the life of a child, before environmental influences have had time to make a large impact. Another possible source of the tension is the effect of a pregnant woman's stress hormones on the fetus. Research has suggested that prenatally stressed infants show a higher incidence of attention deficits, hyperanxiety, future psychiatric disorders, low birth weight, preterm births and changes in the maturation of the autonomic nervous system (Weinstock, 1997; Wadhwa *et al.*, 1993; Van Reempts *et al.*, 1996).

Genetic predisposition towards developmental problems and mental illness may be associated with genetic predisposition to tension and anxiety levels and their modes of expression. A study by Comings *et al.*, (1991) is supportive of common genetic mechanisms. It suggests that a certain modifying gene is found more frequently in patients with Tourette Syndrome, Attention Deficit Hyperactivity Disorder, autism and alcoholism. Since a comprehensive consideration of personality traits reveals that developmental problems do not exist as entities which are independent of one another, but are rather comprised of tension or anxiety-related traits which overlap throughout the various conditions, common genetic mechanisms are to be expected.

Cause and effect need careful consideration in brain imaging studies. A study by Paulesu *et al.* (1996) using positron emission tomography (PET) suggests that dyslexia is a problem of disconnection. It can be argued that this disconnection is caused by programmed tension-related shutdown responses (Sims, 2002). Similarly, PET studies of the neural systems of dysfluency (for example, Fox *et al.*, 1996) may illustrate effect but not necessarily cause, which might be of a psychological nature. The manner in which we use or fail to use our brains influences their physical characteristics, biochemistry and behaviour.

Menzies and Onslow (1996) draw attention to the contradictory and ambiguous findings which cram the literature on the subject of anxiety and stammering. Measuring anxiety is a difficult procedure and the selection of some control groups could be problematic since, if tension is not expressed in a stammerer, it may be expressed in another less obvious manner. Menzies *et al.*, (1999) believe that despite considerable methodological flaws, positive findings in the literature provide clues about the possible relationship between stammering and anxiety. It is clear that further studies are required.

The theory that developmental stammering arises from tension and is a complex tic has been incidental to an overall view of developmental problems. It is advocated that research projects take a wide, inclusive, overall view of these difficulties and that normal childhood behaviour is noted with the appreciation that such difficulties can arise from it.

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Corresponding Author:

Patricia Sims, MRCSLT,
Private Practice, Devon, UK
email: dandtsims@ukonline.co.uk