

WHAT'S THE EVIDENCE FOR ...?

Introduction

Elise Baker

Evidence-based practice, clinical decision making guided by science and research, is something we all aspire to. The concept was derived from the field of evidence-based medicine (EBM) (Taylor, 2000) and refers to “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients” (Sackett, Rosenberg, Gray, Haynes & Richardson, 1996, p. 71). For speech pathologists, this means searching for recent, valid and reliable evidence of efficacious (effective and efficient) interventions, then using this evidence in conjunction with their own clinical expertise to decide on, implement and evaluate suitable interventions on a case-by-case basis (Baker & McLeod, 2004). This edition of the ACQ launches the first of a new regular column dedicated to helping Australian speech pathologists in this endeavour. In this and subsequent issues of the ACQ, published evidence on topics relevant to clinical practice will be sifted, digested and summarised for readers. As readers you are encouraged

to participate in this process. If you have examined the evidence in a particular area of clinical practice – share your findings with others (email: E.Baker@fhs.usyd.edu.au). Enjoy the first review of the evidence surrounding the use of oral motor exercises for children with speech impairment, carefully and comprehensively compiled by Caroline Bowen, PhD.

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WHAT IS THE EVIDENCE FOR ...?

Oral motor therapy

Caroline Bowen

Oral motor therapy is in your face. Trade displayers at conferences adorn their bosoms with cute rubbery pendants; catalogues and professional publications glisten with advertisements for Ps and Qs; straws, horns, chewy tubes, bubbles and bite blocks mean big business; special offers and freebies abound; and oral-motor Tools-and-Toys-R-Us! Or are they?

Oral motor therapy involves the use of atheoretical, unevaluated, hierarchical and highly systematic, non-speech oral exercise schedules, whose aim is to stimulate speech development, improve speech production in general, and remedy specific speech-sound errors. The common aim of oral motor therapy for adults and children (Beckman, 1988; Boshart, 1998; Chapman Bahr, 2001; Marshalla, 2001; Rosenfeld-Johnson, 1999) or oromotor work for children (Williams and Stephens, 2004) is to facilitate or improve speech, by:

- increasing the range, accuracy, power and rate of articulator movements,
- enhancing voluntary control of oral movements,
- heightening awareness of oral structures,
- constructing motor programs underlying phonemic features,
- tempting “reluctant children” to participate in therapy,
- warming up the speech musculature,
- disguising therapy as play and making it fun.

Anecdotally, amazing claims are made with respect to treatment outcomes and efficacy, but none are reported in the peer-reviewed literature, and no studies appear to be in progress.

Activities may include blowing horns, bubbles, feathers and cotton balls; sucking or drinking thick shakes; repeated and alternating lateral, pointing, and up-and-down tongue movements; licking; biting; pushing on a spatula with lips or tongue; holding pencil-shaped objects between top lip and nose; lip protrusion, spreading and rounding exercises; breath control exercises; and many more. In sum, the therapy looks like a massive elaboration of an oral motor examination, in which every “failed” item is converted into an exercise intended to impact on speech (cf. Lof, 2002).

Responding to criticism, and despite evidence to the contrary, in recent times *some* of the oral motor therapy proponents now say that they have never claimed that oral motor therapy *alone* improves speech output. For example Rosenfeld-Johnson and Manning (1999b) write:

Traditional speech therapy without the proper muscle control cannot be completely successful, but it is equally important to remember that oral-motor therapy is an adjunct to traditional therapy, not a replacement. It is critical that clinicians not stop or replace their client's current therapies in favor of oral-motor therapy, rather that they use it as an additional building block. When the targeted muscles do normalize, the introduction of traditional methods such as auditory feedback, or phonological processing approaches, attain measurably higher degrees of success. Using toy horns as therapy devices to achieve that goal is powerful and fun. (p. 1).

This viewpoint is not always made clear, and in a subsequent article Rosenfeld-Johnson (2001) contrasts a simplistic

interpretation of traditional therapy with oral motor speech therapy:

Traditional therapy is based on a multi-sensory approach that deals with the production of speech. In simple terms, the therapist shows the child a ball and says "ball," then the child repeats the word ... But many children simply do not have adequate muscle tone in the mouth for traditional speech therapy alone to be successful, and they end up frustrated. In contrast, oral-motor speech therapy is based on the premise that normal oral structures and patterns are necessary for normal speech. If the problem is poorly developed oral muscles, then the solution is to strengthen and train these muscles. (<http://www.specialchild.com/archives/ia-051.html>)

The methods and techniques of oral motor therapy are rarely imparted to student speech-language pathologists, but training is readily available via self-study packages and courses including ASHA approved CEU events. Information about these learning opportunities is available on the following websites:

- Deborah Beckman MS CCC-SLP <http://beckmanoralmotor.com/about.htm>
- Charlotte A. Boshart MA CCC-SLP <http://www.speechdynamics.com>
- Diane Bahr MS, CCC-SLP, CMT, CIMI <http://www.oral-motor.com/>
- Pam Marshalla MA CCC-SLP <http://www.pammarshalla.com/>
- Sara Rosenfeld-Johnson MS CCC-SLP <http://www.talktools.net/cgi-bin/talktools.storefront>

In oral motor therapy, the clinician works from the bottom up (Kamhi, 2005), beginning with oral postures and movements that include pursing, blowing, sucking, chewing, tongue protrusion, tongue lateralisation, tongue elevation, humming, and lip and jaw manoeuvres. Explaining the bottom-up approach within the psycholinguistic framework (Pascoe, Stackhouse and Wells, 2005), Williams and Stephens (2004) write: "oro-motor exercises are seen as an integral part of the of the Nuffield Dyspraxia Programme" (p. 94). The therapy approach is explained in detail in chapter 5 of the manual, and summarised by Williams in a one-page workshop handout for speech and language therapists: "skills are conceptualised as a brick wall, with pre-speech oro-motor skills and single consonant and vowel sounds seen as the foundations, and word level skills built up in layers of bricks on top of the foundations", while Williams, Stephens and Connery (2004) and Connery (1994) advise clinicians to start by introducing oromotor activities, *independent* of speech production, for a short time.

Strength, agility, precision, co-ordination and awareness of oral movements are targeted through a series of systematic exercises, usually requiring the purchase of oral-motor tool kits and toys, including straws, horns and bite-blocks (Beckman, 1988; Boshart, 1998; Marshalla, 2001; Rosenfeld-Johnson, 1999), or comparatively inexpensive, easily obtainable equipment such as pipes, balls, bubbles, candles, plastic tubing and familiar toys that a family might already own (Williams and Stephens, 2004). As well, the consumption of food with challenging textures and drinking thick shakes through straws, large, small and curly (Chapman Bahr, 2001) may be presented as part of the therapy. A quick Google with the search string (oral motor products), provides a startling impression of how aggressively these items are marketed.

Following this initial focus on non-speech postures and exercises, most oral motor therapies move on to the production of sound segments: in other words, still not

speech (Beckman, 1998; Boshart, 1998; Chapman Bahr, 2001; Mackie, 1996a, 1996b; Marshalla, 2001; Rosenfeld-Johnson and Manning, 1999a; Strobe and Chamberlaine, 1997; Williams and Stephens, 2004).

The "evidence" for oral motor therapy is largely of the emotive, anecdotal, testimonial and promotional variety, often with a dose of hyperbole. For example, Marshalla describes her 2001 text as, "A must-read for speech and language pathologists involved in articulation, phonological, feeding and oral-motor therapy", and claims that she "facilitated the speaking careers of many therapists involved in oral-motor therapy" (2003). Rosenfeld-Johnson (2001) reports having "devoted her life to teaching other therapists and parents how to use oral-motor speech therapy". Known for her dynamism, Boshart (undated web page <http://www.speechdynamics.com/aboutus.html>) writes that each year she, "shares her 'oral-sensory motor paradigm and practical therapy procedures' nationally at numerous seminars, in-services, and conventions" and that her "exhilarating and informative presentations are designed to give any attendee a shot in the therapeutic arm!"

The non-peer-reviewed literature reveals that clinicians are encouraged (Beckman, 1998; Boshart, 1998; Chapman Bahr, 2001; Marshalla, 2001) and indeed *parents* are encouraged (Rosenfeld-Johnson, 2001; Williams, 2002) to apply the approach to a range of childhood speech production disorders: phonetic, phonemic, motoric, and structurally based, as well as those associated with developmental delay and specific syndromes. Williams (2002), writing about Developmental Verbal Dyspraxia for a British consumer group, advises:

If you are waiting to see a speech and language therapist and want to start doing something helpful with your child, these exercises ... provide a good starting point...Oromotor exercises are advised to help the child develop accurate and rapid movements of all areas of the speech apparatus in preparation for coordinating these movements in the production of speech sounds. (p. 1)

The overwhelming message from the evidence base (Apel, 1999; Baker and McLeod, 2004; Gierut, 1998) is to caution against oral motor therapy practices (Clark, 2003, 2005; Forrest, 2002; Golding-Kushner, 2001; Hodge, 2002; Hoffman and Norris, 2005; Lof, 2003; McNeil, Robin and Schmidt, 1997; Moore and Ruark, 1996; Stierwalt, Robin, Solomon, Weiss and Max, 1995; Strand and Sullivan, 2001; Tyler, 2005), with a secondary, but rather half-hearted call for the research that is sorely needed.

Approaching the task of trying to locate evidence for, and understand the theoretical foundations of, oral motor therapy, Clark (2003) wrote:

At least two strategies are available to clinicians selecting management techniques for specific individuals: The approach that is advocated by evidence-based practice is to refer to research reports describing the benefits of a particular treatment. The question asked in this case is, "Is this treatment beneficial?" In the absence of adequately documented clinical efficacy, clinicians may select treatments based on theoretical soundness. The question asked in this case is, "Should this treatment be beneficial?" This second method of treatment selection has potential for success if the clinician has a clear understanding of both the nature of the targeted impairment and the therapeutic mechanism of the selected treatment technique. (p. 400)

Applying these strategies to oral motor therapies was disappointing. Neither evidence nor theoretical justification was available. Taking a slightly different tack, Lof (2003) saw the rationale for oral motor therapy as resting upon four underlying assumptions relating to: speech anatomy, articulator strength, part to whole training and muscle preparation. He set about looking for the evidence for and against each one, and in a brief but very nicely argued review article, provided contemporary evidence to counter each assumption with its associated claims.

Speech anatomy: It is assumed and claimed that the structures used for speech perform the same way for non-speech gestures. But the task specificity research tells us that there are differences in nervous system organisation for non-speech versus speech movements (Clark, 2003; Hodge, 2002; Moore & Ruark, 1996). For example, blowing exercises can aid velopharyngeal closure during other blowing tasks, but this closure is not maintained for speaking (Golding-Kushner, 2001). In the infant chewing literature we find that for babbling mandibular muscle activation patterns “the coordinative organization for speech and non-speech activities is task-specific and distinct” (Moore & Ruark, 1996, p. 1045). Due to task specificity, skilled non-speech movements do not translate into skilled speech movements.

Articulator strength: It is assumed and claimed that oral motor exercises strengthen the articulators. According to Forrest (2002), very little strength is needed for speech – about 10–20% of maximal lip muscle force capability, and about 11–15% of maximal jaw force capability. Furthermore, having a speech sound disorder does not mean a child uses, or needs to use, more “strength” than typically developing children. Children with developmental apraxia of speech, for example, exert the same lip and jaw forces as children with typical speech. Tongue forces for speech are not known (Forrest, 2002).

Even if strength were needed for speech, the level of exercise offered by oral motor therapy would not be sufficient to make a difference, because the number of repetitions is not enough, the frequency of exercise sessions is too low, and the exercises themselves are not conducted against resistance. Lof (2003) uses the example of curling your arm many times towards your shoulder not increasing the strength of your biceps, and compares it with the futility of “tongue waggles”. Furthermore, if the exercises did increase strength, they probably would not aid speech production because of the task specificity factors relating to the first assumption, discussed above. As an aside, agility and range of movement are probably more important for speech than strength, but strengthening exercises do not improve agility and range, even for individuals with dysarthria (Hodge, 2002).

Part to whole training: It is assumed and claimed that non-speech activities are relevant to speech, and that if the necessary “underlying movements” are taught, they can then be put together for speech. The data on neural control show, however, that relevant behaviours must be used in order for change to occur: “For training to be effective, there cannot be disintegrating of the muscle movements that need to occur in smooth concert with each other” (Forrest, 2002, p. 19). Sensory motor stimulation to improve articulatory performance must be targeted appropriately, with a clear goal identified. Oral motor exercises lack relevance to speaking because they are “fractionated” or “disintegrated” from the goal of talking (and talking is a highly integrated task). The small “broken down” bits that oral motor exercises represent will not automatically integrate into speech behaviours. Lof (2003, p.

8) sums up: “All highly integrated tasks must be taught as a whole, not as isolated parts.”

Muscle preparation: It is claimed that warming up the speech musculature at the beginning of therapy will facilitate speech goals in a session, and lay the foundations for speech. With non-verbal children they lay the foundation for learning to talk by getting the muscles used to the movements they must perform. “Warm up” drills *may* be beneficial in creating a “fun start” to a therapy session, and keeping a child engaged and interested, but there is no evidence to support their use in terms of speech outcomes, even for “oral awareness” training. The evidence indicates that non-speech behaviours are not a precursor to later speech learning, so they are not a “foundation” for speech.

There are many well-tried, efficacious, efficient, effective therapies available for us to choose from when devising intervention for individual clients. Oral motor therapy is not one of them. With no theoretical underpinning, and in the absence of an evidence base, it is clear that oral motor therapies are not for us, and that part of our professional role and responsibility is that of informed disclosure: both to clients and to concerned colleagues. What a strong and enlightened move it would be if Speech Pathology Australia were to lead the way as the first professional body to issue a policy statement condemning the use of oral motor therapy, and saying why.

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CONFERENCE REPORT

Suze Leitão

In April this year I attended the inaugural Canterbury Conference on Communication Disorders in Christchurch, New Zealand. The conference was hosted by the Department of Communication Disorders at the University of Canterbury and drew over 200 delegates from around the globe.

Three streams ran concurrently: audiology and hearing science, developmental communication disorders and acquired communication disorders. Presentations by invited speakers were scattered throughout the two days, mixed among sessions containing research papers and presentations. I really enjoyed the opportunity to hear longer presentations from speakers such as Carol Stoel-Gammon on the topic “Babbling and speech development: How early can we identify a speech disorder?” through to the very practical workshop style presentation from Joe Duffy on differential diagnosis of acquired speech disorders. The sessions lasted one and a half hours and allowed plenty of time for in-depth

presentations and questions, a highlight of the conference for me. There was a high standard of papers presented as well, from both experienced presenters as well as postgraduate and honours students.

Funds from the Erskine Bequest allow a large number of visiting academics to visit this University and lecture to the students. A quick check of recent Erskine fellows on the Department of Communication Disorders website reads like a “who’s who” in the field of speech and language pathology and audiology. In 2004, the visiting “Erskines” were Professors Hugh Catts, Laura Justice, Ann Michael and Ann Tyler. The links were obvious from the number of American presenters at the conference and allowed for plenty of global networking!

Plans are already in place for the 2007 conference and I can highly recommend a trip across the Tasman!