Did you ever wonder why most speech-language pathologists refer to themselves as speech therapists, why most people do not know what a phonological disorder is, or why the number of children with an auditory processing disorder has increased dramatically in recent years? Why do some terms, labels, ideas, and constructs prevail whereas others fail to gain acceptance? Why did it take until 1997 for the Journal of Speech and Hearing Research to add “language” to its title? Why is it more desirable to have dyslexia than to have a reading disability? Why does no one other than speech-language pathologists and related professionals seem to know what a language disorder is? Why is Asperger’s syndrome, a relatively new disorder, already familiar to many people?

To answer these questions, it is helpful to borrow concepts from the study of the evolution and spread of ideas. Several years ago, Stanovich (2000) borrowed these concepts to explain why science seemed to be losing the Reading War to what he called “the whole language disinformation campaign.” In order to explain why misinformation wins and scientific information loses, it is necessary to find something that explains situations in which the truth value of an idea is not the primary determinant of its use.

THE SELFISH MEME

At the end of his seminal book, The Selfish Gene, Dawkins (1976) proposed the existence of a replicator that conveys the idea of a unit of cultural transmission or a unit of imitation that is an important complement to genetic transmission. Dawkins named this new replicator a meme because it sounded like gene and was derived from a suitable Greek word, mimeme. Although the idea of a meme has sometimes been dismissed as nothing more than a bit of fun, Blackmore (1999), in her recent book, showed how this idea is capable of transforming our understanding of the human mind. So what exactly is a meme? It is an element of culture that is passed on by non-genetic means, especially by imitation, where imitation is broadly defined to include any kind of copying of ideas and behaviors from one person to another (Blackmore, 1999). Tunes, ideas, catch phrases, clothing fashions, and ways of cooking are all examples of memes. Scientific ideas that catch on, as well as ceremonies, customs, and technologies, are also examples of memes.

As Stanovich (2000) noted, “the key idea in memetic theory is that a meme is a true selfish replicator in the same sense that a gene is” (p. 377). Selfish does not mean that memes or genes make people selfish, but that they care only about their own self-replication. This means that their survival does not depend on whether or not they are useful, true, or potentially harmful. Successful memes are those that get copied accurately (fidelity), that have many copies...
(fecundity), and that last a long time (longevity). Selection favors memes that are easy to understand, remember, and communicate to others. A brilliant new idea, such as the idea of memes, may spread because of its usefulness. A song may spread because it is easy to sing. New fad diets, ineffective treatment approaches, or dangerous medical cures may spread because they are easy to implement. Embracing the notion of memes thus changes the fundamental question of “How do people acquire ideas and beliefs?” to “How do ideas and beliefs acquire people?” In a meme’s eye view, the ideas we think are our own are actually autonomous selfish memes whose continued existence depends on getting themselves copied. Humans serve as the physical hosts and vehicles that are necessary to store and pass on memes (Blackmore, 1999), but we are not the only hosts and transmitters of memes. Computers and the Internet have proven to be excellent hosts and transmitters as well.

**MEME COMPETITIONS IN SPEECH-LANGUAGE PATHOLOGY**

Blackmore (1999) made the case that meme competitions are one of the forces that have shaped language change. Meme competitions also underlie many of the choices we have in labeling and classifying disorder types, as well as in deciding how we refer to ourselves and our professional organization. Here are some of the more obvious meme competitions in our field: language disorder/language impairment/specific language impairment/language learning disability versus auditory processing disorder/central auditory processing disorder, language and auditory processing disorders versus sensory integration disorders, learning disability versus language disorder/language learning disorder, reading disability versus dyslexia, articulation disorder/speech delay versus phonological disorder versus developmental apraxia, autism/Asperger’s versus pervasive developmental disability, speech pathologist/speech therapist versus speech-language pathologist, and ASHA versus American Speech-Language-Hearing Association.

As noted previously, according to memetic theory, more successful memes will be those that are easier to understand, remember, and communicate to others. More specifically, more successful memes should spread quickly to professional and nonprofessional communities. Less successful memes, in contrast, will take longer to be accepted by the professional community and may never disseminate widely to the larger community. Using these criteria, the current winners of our meme competitions are learning disability, auditory processing disorder, sensory integration disorder, dyslexia, articulation disorder, developmental apraxia, autism, Asperger’s, speech therapist/pathologist, and ASHA. The losers are every term that has language in it (e.g., language disorder, language learning disability, speech-language pathologist), phonological disorder, and pervasive developmental disability.

The most obvious example of the failure of language-based terms to gain acceptance involves our professional identity as speech-language pathologists. Despite the use of speech-language pathologist in every official publication of ASHA for the past 30 years, most professionals still refer to themselves as speech therapists or speech pathologists. Speech therapists often do not even refer to themselves as speech-language pathologists when they are talking to other professionals. Another example is that when ASHA became the American Speech-Language-Hearing Association, it was recognized that having an unpronounceable acronym (ASLHA) would not be a good way to promote the profession. Language loses out again.

Given the struggle that language has had in becoming part of our profession, it should not be surprising that language-based disorders have failed to become a recognizable learning problem in the community at large. If people understood what it meant to have a language disorder, then it would be much easier to promote ourselves as the professionals best qualified to treat language-based problems. In contrast, easily understood disorder types, such as auditory processing disorders and sensory integration disorders, have been much more successful in spreading to the larger community, despite the controversy that has surrounded these disorders in our profession. In the next section, I discuss in more detail the different forces that have made language and language-based disorders less successful memes than auditory processing disorders and sensory integration disorders.

**WHY LANGUAGE IS NOT A VERY SUCCESSFUL MEME**

Memetic theory holds that unsuccessful memes like language and language-based disorders must be difficult to understand, remember, and communicate to others. But, what is difficult to understand about language? Doesn’t everyone know what language is? Unfortunately, this is the problem. Everyone thinks that they know what language means, so they assume that they understand every term that has language in it. A language is what one speaks, like English, French, or Russian, so a language disorder by extension must involve some difficulty learning one’s native language. Because individuals who have difficulty learning English are typically nonnative speakers, it is natural to assume that a language disorder is something related to second language learning.

The way professionals define language is, of course, quite different. Language has a specialized meaning for speech-language pathologists, linguists, psycholinguistics, psychologists, and other professionals who study language learning and disorders. It is this meaning that is not widely known, not well understood, and difficult to communicate. In my language development class, it may take 30 min to deconstruct even a simple definition of language, such as the one in Owens (2001, p. 7): “Language can be defined as a socially shared code or conventional system for representing concepts through the use of arbitrary symbols and rule-governed combinations of those symbols.” It takes an entire course to cover all of the factors listed in a
comprehensive definition such as the one developed by ASHA’s Committee on Language in 1983. This definition begins with the statement that “language is a complex and dynamic system of conventional symbols that is used in various modes for thought and communication” (p. 44), but then adds four other components that address: (a) how language evolved; (b) the five language domains (phonology, morphology, syntax, semantics, and pragmatics); (c) how language is influenced by biologic, cognitive, psychosocial, and environmental factors; and (d) the requirements for the effective use of language for communication.

Even though most speech-language pathologists are familiar with the various aspects of ASHA’s comprehensive definition of language, this professional definition is often not applied to clinical practice. Apel (1999) suggested that this is because language is typically evaluated with standardized language tests or other instruments that examine isolated aspects of language. These measures do not consider the interaction of different domains of language or view language within the larger sociocultural context. Memetic theory provides another explanation: Simple constructs are more likely to replicate than complex ones. Even when a complex construct like language is understood, it is difficult to replicate this complexity in the real world of clinical practice. In other words, even professionals who understand language may have difficulty communicating its meaning to others and applying this meaning to clinical practice.

The inherent complexity of language and the diverse factors that impact on language means that it is not possible for any one factor to account for the uniformity or variation in language development. The different disciplines that study these factors (e.g., neurology, developmental psychology, linguistics, speech-language pathology, audiology, teaching English as a second language) often are associated with distinct experimental methodologies, theoretical traditions, and instructional practices. Given all of these differences, one would expect a variety of answers to questions about how language develops and why some children have difficulty learning language.

Parents with children who have language learning problems are, of course, very interested in the answers to these questions. An informed clinician might explain to parents the various factors that contribute to language learning and attempt to assure them that something they did or did not do was not the cause of the problem. Unfortunately, answers that provide several causal possibilities merely confirm what the parents already know: Their child has difficulty understanding language and is not talking and putting words together like other children. Most parents will appreciate having a professional confirm what they already know, but this appreciation might not prevent them from trying to find another professional who can provide a more straightforward explanation for their child’s language learning problem. Parents are ultimately interested in finding the most effective and efficient treatment for their children. They believe, like most everyone else, that the professional who knows the cause of the problem will also know the most effective way to treat it.

**WHY AUDITORY PROCESSING DISORDER AND SENSORY INTEGRATION DISORDER ARE SUCCESSFUL MEMES**

In light of the previous discussion, it should be apparent that one of the main reasons auditory processing disorder (APD) and sensory integration disorder (SID) have successfully permeated the larger community is that they both provide an understandable and plausible answer to the causation question—namely, that the learning problem is the result of difficulty processing auditory information or difficulty integrating sensory information. It does not matter whether these answers are superficial or correct. As noted earlier, successful replication does not depend on the truth value of an idea. There is indeed considerable controversy about whether APD and SID are useful diagnostic classifications (e.g., Friel-Patti, 1999; Griffer, 1999), but these are professional disputes that hold little interest to parents and other nonprofessionals.

Another aspect of APD and SID that makes them successful memes is the implicit assumption associated with these disorders that improving auditory processing and sensory integration abilities will have a direct impact on language and learning abilities. Unlike a language disorder, with its multiplicity of causal correlates, APD and SID each have only one cause. Finding an appropriate treatment thus seems more feasible because there is only one problem to eliminate. Most parents will no doubt experience a sense of relief in finally receiving an understandable explanation for what is wrong with their child and also feel more hopeful that this diagnosis will lead to successful remediation of the learning problem.

APD and SID are also successful memes because the theoretical assumptions associated with these disorders are simpler than those associated with a language disorder. Two simple assumptions support the causal connection between auditory processing and speech-language development: (a) Sounds are the building blocks of speech and language and (b) children learn to talk by stringing together sounds and constructing meanings out of strings of sounds. Because infants appear to be producing individual sounds, it is easy to see why many people believe that sounds must be the building blocks of speech and language.

These two assumptions are known to be wrong, but understanding why they are wrong requires sophisticated knowledge of research in speech perception, phonetics, and language development. For the last 40 years, researchers in speech perception have attempted to find the acoustic (auditory) correlates of phonetic segments (sounds). What they have found instead is that “the acoustic signal of speech shows no distinctive boundaries that might mark where one segment ends and another begins, and the acoustic properties that can be associated with any particular segment are spread over fairly broad temporal regions” (Nittroeur, 2002, p. 238). In other words, individual sounds do not exist as neatly packaged and sequenced units (Nittroeur, 2002). Moreover, children younger than 5 years generally cannot access phonetic structure (i.e., do not have phoneme awareness) or use knowledge of sounds to process
language (Torgesen, 1999). Indeed, it is not uncommon for 6- and 7-year-old children to have difficulty accessing phonological information (e.g., Torgesen, 1999). It is hard to envision, then, how young children can use sounds to process language when the language and cognitive knowledge required to access these sounds does not even begin to emerge until age 5.

Children also do not learn to talk by stringing together individual speech sounds. There is converging evidence that words are, in fact, the entry level for speech and language learning (Velleman & Vihman, 2002). Infants do not produce individual speech sounds; they produce syllables and syllable combinations (CV, VC, CVCV) that become the templates for their first words during the second year of life (Velleman & Vihman, 2002).

It should be clear how it is much easier to think that sounds are the building blocks of speech and language than to acknowledge that individual speech sounds have no acoustic correlates in the speech stream. Ideas that make intuitive sense are generally more successful memes than those that require scientific knowledge and expertise to understand. The proliferation of some of these ideas can be problematic or even harmful and dangerous. Stanovich (2000), for example, argued that the “whole language disinformation campaign,” a particularly insidious but successful meme, has been particularly harmful to teachers who do not have access to scientific information about reading and to children who have difficulty learning to read. In the same vein, one of the possible dangers of APD and SID winning the meme competition with language-based disorders is that the children with these disorders may not receive the language-based therapy they need.

WHY PHONOLOGICAL IS NOT A VERY SUCCESSFUL MEME

Like other terms that have not spread easily or widely, phonological is difficult to understand by itself and even more difficult to understand in constructs like phonological disorder and phonological processing. For example, even among professionals, there is a lack of consensus about what a phonological disorder is. Some professionals take a broad view of phonological disorders that encompasses the entire speech production process, from perception to phonological organization to speech production (Kamhi, 1992; Shriberg & Kwiatkowski, 1982). Others (e.g., Bauman-Waengler, 2000) take a narrower view, restricting phonological to the representation and organization of phonemes within the language system. Even if a phonological disorder was easy to define, it would probably lose a meme competition with the terms it was intended to replace because articulation disorder and speech problem/delay are easier to understand and communicate to others. This is why even some of the staunchest supporters of the notion of phonological disorders rarely use the term with parents (cf. Kamhi, 1992, p. 262).

The lack of familiarity with the term phonological also helps to explain why the phonological bases of reading problems are still not widely known or acknowledged (Stanovich, 2000). It is much easier to associate reading with visual processing abilities, good instruction, and a literacy-rich environment. These are simpler ideas than phonological processing, which refers to the ability to use phonological codes to encode, store, and retrieve information. The ability to identify and manipulate sounds in words (phoneme awareness) requires accurate phonological representations of words, which depends on adequate phonological processing abilities. Although some educators and most speech-language pathologists are familiar with the skills associated with phoneme awareness, the relationship between phoneme awareness and phonological processing is not widely known, and if it is known, it is not easy to explain to others.

MEMEPLEXES

Memetic theory refers to memes that replicate together as memeplexes (Blackmore, 1999). Listing the specific ideas associated with the language, APD, SID, and phonological memeplexes provides a useful way to review and summarize the information presented in the previous sections.

The Language Memeplex

- “Language is a complex and dynamic system of conventional symbols that is used in various modes for thought and communication” (ASHA, 1983, p. 44).
- A language disorder is an impairment in the understanding and/or use of spoken or written language. It may involve the form (phonology, morphology, syntax), content (semantics), or function (pragmatics) of language in any combination (ASHA, 1993).
- The entry level for speech and language development is words, not sounds, morphemes, or other sublexical units (Velleman & Vihman, 2002). Individual speech sounds do not exist as neatly packaged and sequenced units (Nittrouer, 2002).
- Children younger than 5 years generally cannot access phonetic structure (i.e., do not have phoneme awareness) and, therefore, are unlikely to use knowledge of sounds to process language.
- Because of the complexity of language, it is unlikely that any one factor can account for the uniformity or variation in language development.
- What occurs when language learning takes place is, paradoxically, less of a mystery to nonprofessionals than it is to those who study language learning.

The first five points have already been discussed. The sixth one reflects the paradox that most nonprofessionals think they know how children learn language and the factors that affect language learning.

The APD Memeplex

- Sounds are the building blocks of speech and language.
– Children learn to talk by stringing together sounds.
– Children learn language by constructing meaning out of strings of sounds.

• The development of auditory processing abilities is causally related to the development of speech and language.
• Improvements in children’s ability to discriminate and identify speech sounds will lead to improvements in speech and language abilities.
• Children with APD can be reliably differentiated from children with language disorders.
• Auditory processing abilities exist that are not influenced by language knowledge.
• There are reliable and valid measures that can assess these “uncontaminated” auditory processing abilities, and it is these measures that are used to diagnose APD.
• Treatment for APD can target auditory abilities alone without also targeting attentional or language processes.

As noted earlier, the first assumption and its two corollaries are fundamental to the construct of APD. If one does not believe that speech sounds are the building blocks of language learning, then one would have a hard time with the logic of APD. The next two assumptions follow logically from the first one. The remaining points address the view that in order for APD to be a meaningful construct, it needs to be reliably differentiated from a more general language disorder (cf. Bellis, 2002; Newman-Ryan & Kamhi, 2002).

The SID Memeplex

• Sensory integration involves analyzing, organizing, and integrating sensory information (cf. Ayres, 1989; Mauer, 1999).
• Sensory integration can affect any aspect of learning, including language, reading, cognition, and psychosocial development. It can also affect attention and motivation.
• SID can coexist with any developmental disorder, including autism, mental retardation, learning disabilities, reading disabilities, language disorders, APD, attentional problems, and behavioral disorders.
• Behaviors associated with SID include hyperactivity, hypoactivity, poor fine-motor coordination, trouble learning to read and to do math, speech and language problems, short attention span, irritability, academic problems, social problems, emotional problems, and self-regulation problems.
• Improving sensory integration has the potential to improve all aspects of learning and other behaviors associated with SID.

SID has been a particularly successful meme because it is so all-encompassing. It affects all aspects of learning because it is not possible to process information without using one of the sensory processes (e.g., vision, hearing, touch, smell, taste, tactile, vestibular, or proprioceptive). Not surprisingly, SID has been found to coexist with every developmental learning problem and has been linked to every possible learning or behavioral problem. Because all of these problems are presumed to be caused by an underlying deficit in integrating sensory information, improving sensory integration abilities has the potential, in theory, to affect a wide range of behaviors positively (Ayres, 1989; Mauer, 1999).

The Phonological Memeplex

• “Phonology is the aspect of language concerned with the rules governing the structure, distribution, and sequencing of speech sounds” (Owens, 2001, p. 22). Phonology subsumes articulation. It includes aspects of speech production and perception and the cognitive–linguistic aspects of the sound system (Schwartz, 2002). A phonological disorder thus encompasses any problem with the sound system of language, including speech perception, phonological organization, and speech production.
• Phonological processes are operations that affect sound change. Examples include cluster reduction, stopping, and final consonant deletion.
• Phonological processing involves the ability to use phonological codes to encode, store, and retrieve information. The ability to identify and manipulate sounds in words (phonological awareness) depends, in part, on accurate encoding and storage of words. Phonological processing abilities (particularly phoneme awareness) are highly correlated to early reading abilities.

As discussed earlier, the basic problem with phonological memes is that few people know what phonological means, and even those who do often use other terms (e.g., articulation disorder, speech delay) to describe children with phonological disorders. In addition, phonological processes and phonological processing are not easy constructs to understand, which makes it difficult even for professionals to communicate their meaning to others.

OTHER FACTORS THAT INFLUENCE MEME TRANSMISSION

Dyslexia and Asperger’s syndrome are examples of successful memes in which understanding is not the only factor that influences the widespread appeal of these terms. Dyslexia, like phonological disorder, is another example in which there is some controversy over the definition of the disorder. Unlike phonological disorder, however, which few nonprofessionals understand, dyslexia is understood by most people to be a reading problem characterized by letter reversals and word transpositions that affects bright children and adults. The cause of dyslexia is assumed to be visually based. The easy diagnosis of dyslexia (presence of
letter reversals) and its association with high intelligence are the primary factors that have made it a successful meme. The fact that the diagnosis of dyslexia has historically been made by physicians and psychologists rather than educators has also contributed to its successful replication and widespread appeal. This appeal extends to individuals with reading problems. It is much more common to meet someone who readily admits to being dyslexic than to meet someone who describes them- or herself as having a reading disability or being reading disabled.

Asperger’s syndrome is another example in which understanding is not the only factor responsible for successful replication. Asperger’s has successfully permeated society in a short period of time because it describes a syndrome that previously had no label. In the past, individuals who had social interactive problems despite adequate language abilities would have gone undiagnosed or been viewed as having poor social skills. Unlike other memes discussed in this article, Asperger’s essentially had no competition and that is why it propagated quickly.

CONCLUSION

The appeal of memetic theory is that it provides a plausible explanation for how ideas are transmitted and spread. Its key notion is that genes are not the only replicators; there is a unit of cultural transmission, the meme, that is also only interested in its own replication. Memes, like genes, are selfish in the sense that they both just want to be passed on to the next generation. Because memes are independent, they will use anything they can to replicate. Ease of understanding is often a good way to ensure replication, but it is not the only way to increase the chances of getting copied, as the examples of dyslexia and Asperger’s demonstrate.

Anyone who has wondered about how ideas get spread should find the idea of memes attractive. Teachers should have a particular interest in memetic theory because they are one of society’s officially sanctioned meme spreaders. Every lecture, class discussion, clinical practicum, and workshop provides opportunities to spread ideas, but teachers cannot ensure that the ideas they transmit will get copied. Ideas are their own prime movers; they are responsible for their own replication. Memetic theory thus modifies the old adage that “teachers can shape minds” to “ideas are in search of minds to shape.” Teachers may be the vehicles for spreading ideas, but it is the ideas themselves that must be accepted and copied in order to flourish.

The notion that ideas care only about their own self-replication means that every human being will convey ideas that run the gamut from simple to complex, clear to abstruse, good to bad, silly to profound, and whatever other way ideas can be categorized. No human being is immune to hearing a not-so-good idea and passing it on to someone else. Our processing limitations, cultural biases, personal preferences, and human nature make us more susceptible to certain ideas than to others. It is these factors that explain why APD, SID, and dyslexia have achieved more widespread acceptance than language-based disorders and phonological constructs.

So what is one supposed to do with this knowledge? Do we sit back and applaud our successes and bemoan our failures? Although it has taken some time and effort, language has become an integral part of our professional identity and scope of practice. Knowledge of phonological disorders and phoneme awareness has also permeated our profession. These successes are tempered, however, by the likelihood that language and phonological disorders will never achieve widespread acceptance in the nonprofessional community, speech-language pathologists will continue to refer to themselves as speech pathologists or speech therapists, and APD and SID will continue to thrive.

Stanovich (2000) suggested that the way to resolve the meme wars in favor of science and logic is to provide people with the scientific knowledge necessary to become independent evaluators of evidence-based research claims. Science allows issues to be resolved and not drag on interminably because data will eventually converge and lead to scientific consensus (Stanovich, 2000). It is certainly a worthy goal to provide people with the skills needed to evaluate knowledge claims independently. But, even in the best of possible worlds, understanding the scientific process is no guarantee that evidence will be interpreted the same way by different people. Competing theories may be supported by different bodies of evidence, and the same evidence may be used to support competing theories. Reaching a scientific consensus also takes time. Although issues may not drag on interminably, they may take 10–20 years or longer to resolve. This delay might not be a problem for a scientist whose job it is to do research, but any amount of time is too long for teachers and practitioners who have to instruct students and clients today. They do not have the luxury of waiting for scientific consensus to inform them how best to teach children to read or talk.

Stanovich (2000) is not troubled by this fundamental difference between research and practice because teachers and scientists are kindred spirits at a deeper, more important epistemological level: They are both “committed pragmatists [who] single-mindedly pursue “what works”—ignoring philosophical strictures along the way” (p. 416). This “what works” epistemology makes Stanovich confident that teachers will find a “middle way between the rhetorical blasts” (p. 417) of the different sides of the Reading Wars. I am similarly optimistic that speech-language pathologists will be able to find the middle ground between the meme competitions in our profession. For example, there may be instances in which the diagnosis of APD or SID will enable a student to be eligible for language-based services that otherwise would have been denied.

In conclusion, I have not decided yet which meme competitions I will continue to engage in, but whichever ones I do participate in, at least now I know that the playing field is one in which the truth value and logic of an idea may not be the primary determinant of its appeal and acceptance. This knowledge helps explain why 30 years after Rees (1973) convincingly exposed the problems with APD as a meaningful diagnostic category, there is still the need for articles (e.g., Nittrouer, 2002) and
presentations (Newman-Ryan & Kamhi, 2002) about what clinicians need to know about speech perception, language processing, and APD.

Unfortunately, science, truth, and logic have little impact on our professional identity as speech-language pathologists and how the nonprofessional community views our scope of practice and expertise. Although English has the richest lexicon of any language, it does not have a good word for what we do or who we are. I often wish there were an English-sounding word like *logopedic*, the term used for speech-language pathologists in Europe and other parts of the world. A term that means “word practitioners/teachers” would communicate to everyone that we are the “word doctors,” able to treat any problem that involves words. With such a term, there would be little question about our scope of practice and expertise with language because words are involved in speaking, listening, reading, writing, and spelling. Both professionals and nonprofessionals would know that we are the practitioners best qualified to assess, diagnose, and treat individuals with speech and language difficulties. Without such a term, it remains up to us to spread our language-based memes to all who will listen.

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