



## THE QUALITATIVE SIMILARITY HYPOTHESIS: A COMMENTARY

*Editorial*

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### ABSTRACT

*This article provides a summary of the historical background and basic tenets of the Qualitative Similarity Hypothesis (QSH), which has been applied to explore the language and literacy acquisition of d/Deaf and hard of hearing (d/Dhh) children and adolescents in the United States (and elsewhere, for example, South Korea and Saudi Arabia). The QSH is a developmental similarity model, influenced by the early investigations on language and literacy development of children with developmental/intellectual/cognitive or learning/language disabilities. It is argued that the acquisition of English (or any other phonemic language) by d/Deaf and hard of hearing children or other children in Special Education programs is developmentally or qualitatively similar to that of typical (non-disabled) language and literacy learners. This is also the case for second language learners of English, often labeled English language learners. The QSH can be used to provide indirect support for inclusive education programs and strong direct support for access to the general education curriculum.*

**Keywords:** *d/Deaf and hard of hearing; developmental similarity; English language; English literacy; Qualitative Similarity Hypothesis*

The manner in which children and adolescents with disabilities acquire knowledge and skills has been the subject of ongoing controversial debates. These debates intensified during the 1970s and early 1980s in the United States, providing fuel for the inclusion movement (Paul & Ward, 1996; Thomas & Vaughn, 2004; Valle & Conner, 2011; Winzer, 2009). It can be argued that this movement hastened the deinstitutionalization of individuals with disabilities, eliminated the predominant dependence on specialized curricula in schools for students with disabilities, and birthed the construct of disability rights and disability identities.

The outcomes of the inclusion movement entail addressing accusations of inequality, the need for increased sensitivity to the evolving diverse demography of citizens, and the demand for greater accountability in academic outcomes (Thomas & Vaughn, 2004; Winzer, 2009). This has led to calls for restructured educational institutions to address these challenges to promote equity and equal opportunity. In the United States, this influenced the reinterpretations of several constructs, for example,

the least restrictive environment, access to the general education curriculum, and “developmental similarity.” Developmental similarity proponents averred that the acquisition of knowledge by children and adolescents with disabilities was similar—developmentally—to that of typical counterparts (Paul, 1998; Paul et al., 2013; Stanovich, 1986, 1988, 2000; Stanovich et al., 1988).

The main focus of this commentary is on the *Qualitative Similarity Hypothesis* (QSH) for d/Deaf and hard of hearing (d/Dhh) individuals (Paul, 2012; Paul et al., 2013; Paul & Lee, 2010). The QSH is one developmental similarity model among others, notably the *Developmental Lag Theory* (Stanovich, 1986, 1988, 2000; Stanovich et al., 1988). These developmental similarity frameworks have challenged the scope and context of theory, research, and practice for individuals with disabilities. The QSH, in particular, has provided research support for the use of externally driven models from the larger field of nondisabled individuals as well as internally driven models within the narrow field of deafness (Paul, 2021; Paul et al., 2013; also see Cawthon et al., 2017).

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The plan for this commentary is as follows. First, the historical background of developmental similarity, particularly the QSH, is expounded. Then, the QSH is described with specific attention to research findings and ensuing controversies. Finally, the implications of the QSH are discussed along with recommendations for further theorizing and research. In essence, the following questions are addressed:

1. What is the historical background and research that has led to the development of the QSH for d/Dhh students?
2. What are the major tenets of the QSH and its implications for the development of language and literacy?
3. Why does it seem that the QSH and other similar developmental models are controversial for proponents who work with individuals who are d/Deaf and hard of hearing (and, perhaps, with other special education populations as well)?

### Historical Background

With respect to the first question above, the developmental similarity construct has had a long contentious history, especially for scholars who have explored the development of English language and literacy for certain children with developmental/intellectual or learning/language disabilities (Lenneberg, 1967; Paul, 1985; Rymer, 1992; Winzer, 2009). Earlier versions of the QSH (referred to as qualitatively or developmentally similar) have been supported by the research of Quigley and his collaborators on the acquisition of English syntax by deaf (90 dB or greater PTA) students (Quigley & Kretschmer, 1982; Russell et al., 1976). The crux of the matter—albeit still controversial—involved comparing the performances of children with disabilities with those of typical (nondisabled) language/literacy learners. With respect to deafness, the comparison was with typical hearing learners (Paul, 2009; Quigley & Kretschmer, 1982). However, Paul and his collaborators (Paul et al., 2013) have argued that the comparison group should be labeled typical language/literacy learners (discussed later in this commentary).

One of the earliest research findings for developmental similarity can be found in the work of Lenneberg (1967; also see the discussion in Rymer, 1992). Lenneberg focused on the biological basis and a critical acquisition period (i.e., prior to puberty) for language development. He examined the acquisitions of children with cognitive or intellectual disabilities and those who were learning English as a second language or in bilingual environments. Lenneberg reported that the development of language was quantitatively (i.e., rate or amount) delayed, but developmentally (i.e., manner) similar with respect to mental age, not chronological age, of his participants. Other researchers have documented this pattern for children and adolescents with language/learning disabilities (e.g., see discussions in Cain & Oakhill, 2007; Kamhi & Catts, 2012; Nation, 2005; Valencia, 2011).

It is possible to see the influence of Lenneberg's work in the thinking and research of Stanovich and his collaborators (Stanovich, 1986, 1988, 2000; Stanovich et al., 1988). Stanovich focused on the development of English reading and proffered a critical or optimal period, which has been interpreted—rightly or wrongly—to be about the third grade level (about 8 years old in the USA). Stanovich coined a term, the *Matthew Effects*, which is a biblical reference; however, Stanovich applied it to the development of reading. That is, good readers “get richer”, but poor readers either “stay poor or get poorer.” His point: Good readers will continue to grow and read to learn. Struggling readers will continue to struggle, presumably during the learning to read stage; struggling readers are not likely to catch up if they are not reading on grade level by the end of the third grade.

The assumption is that reading materials become more complex and challenging after the third grade (in the USA), rendering it difficult for struggling readers to reach grade level. These demands present extreme challenges for students who are already one or two reading grade levels behind when they enter the third grade. From third grade and beyond, there is a tremendous increase in the use of decontextualized or literate language (e.g., vocabulary, concepts) in print texts. This increase, coupled with the students' difficulty with the English language, presents an almost insurmountable situation, resulting in a widening of the achievement gap as students progress through school.

Stanovich's *Matthew Effects* has been instantiated in his *Developmental Lag Theory*. This theory calls for intensive instruction in reading prior to the third grade to prevent or minimize “reading failure.” Much of the attention was devoted decoding or access skills, particularly the development of phonology and word identification or word decoding skills. One of Stanovich's major assertions was that good readers who comprehend well possess good word identification skills. If readers possess inadequate word decoding skills, they are not likely to develop adequate comprehension skills. Of course, even if readers have adequate word identification skills, they may still have reading comprehension issues. Even Stanovich acknowledged that reading comprehension require more than just decoding skills.

Another component of developmental similarity that needs to be discussed is disciplinary structure. If a particular discipline has a structure, then that means that there exists an internal logical conceptual framework. In addition, the content of the discipline contains levels of difficulty due to the demands for comprehension or understanding the main points (C. Shanahan, 2009; also see the discussion in Paul et al., 2013). This also means that certain concepts need to be learned before proceeding to higher levels of information or more difficult concepts. So, for example, in mathematics, children need to learn about addition and subtraction before they can move on to multiplication and division, respectively.

Of course, mathematics is quite different from language and reading; however, language and reading still have a logically coherent structure, despite lingering controversies. From another perspective, it can be argued that English language and literacy contains certain fundamentals, which must be learned by all English language/literacy learners—including individuals with disabilities and those who are English language/literacy learners (i.e., second-language learners, etc.) (August & T. Shanahan, 2006; T. Shanahan, 2006). At the macro level, these fundamentals are considered to be elements of decoding (e.g., phonological awareness, word identification, spelling, etc.) and comprehension (e.g., English language proficiency, prior knowledge, metacognition, inferential skills).

It has been argued that the developmental similarity framework can be applied to the learning of any verbal language and its written counterpart, assuming that there is a relationship between the through-the-air form and the written language (letters, characters, etc.) component (Adams, 1990, 1994, 2002; Joshi & Aaron, 2006). There are also other variables that impact the development of language and literacy, particularly sociocultural factors such as the home environment, the teaching-learning situation (e.g., sign communication/interactions), teacher competency, and the literacy curriculum and instruction. Although developmental similarity frameworks do acknowledge the importance of sociocultural factors, much of the emphasis has been on text (e.g., vocabulary) and reader (e.g., prior knowledge) variables.

### The Qualitative Similarity Hypothesis

Considering the historical context, the two major variables of developmental similarity—disciplinary structure and a critical or optimal period—have also influenced the work of Quigley and collaborators (Quigley & Kretschmer, 1982) and, subsequently, the development of the Qualitative Similarity Hypothesis for d/Deaf and hard of hearing students (Paul et al., 2013). It is best to consider the QSH as a descriptive testable framework that contains micro (e.g., word identification, phonemic awareness, etc.) and macro (e.g., English language proficiency, prior knowledge, metacognition, etc.) components. Despite the controversies generated by researchers promoting “visual phonology” of a signed language (e.g., Allen et al., 2009; Allen et al., 2014; McQuarrie & Parrila, 2014; Miller & Clark, 2011), phonology—while an important variable—is not the only major or predominant component of the QSH. Albeit, the QSH does argue that a sound phonology might be more efficient than a visual phonology of a signed language for developing English literacy skills.

Specifically, the QSH maintains that English language proficiency (or any other phonemic language) needs to be adequately acquired to be facilitative of the development of English literacy. Clearly, much more is needed than English language proficiency

for the acquisition of English literacy, but “a sound phonology” is, most likely, the best facilitator for the development of through-the-air English (e.g., speaking and/or signing). In this sense, phonology is the building block for English language development in that it leads to the further development of the language forms—morphology and syntax—and, subsequently, with prior knowledge and metacognition, to the further development of semantics, especially vocabulary, and inferential skills. No further development in English literacy can occur if the individual does not possess receptive and expressive competency in the language of print (e.g., Adams, 1990, 1994, 2002; Cain & Oakhill, 2007; McGuinness, 2004, 2005).

In essence, with respect to the second question posed at the beginning of this article, the QSH asserts that the acquisition of English by any individual is developmentally or qualitatively similar to that of native language learners and to that of typical literacy learners of English. So, irrespective of the degree of hearing loss for d/Dhh individuals, becoming a proficient reader (and writer) depends upon gaining control over, at least, the same corpus of through-the-air language-related (e.g., morphology, syntax, semantics, pragmatics), code-related (e.g., alphabet knowledge, phonological awareness, word identification, spelling), and comprehension-related (e.g., vocabulary, prior knowledge, metacognition) constructs that are necessary for typical literacy learners (Adams, 1990, 1994, 2002; McGuinness, 2004, 2005; National Early Literacy Panel, 2008; National Reading Panel, 2000).

The QSH suggests that there are certain critical fundamentals that facilitate and enhance the acquisition process. The fundamentals of English language entail proficiency in the components (phonology, morphology, syntax, semantics, and pragmatics) for the adequate development of receptive and expressive skills. Paul (2012) delineated critical fundamentals for the development of English literacy:

- Knowledge of the language of print (i.e., components of English).
- Metalinguistic awareness of language- and print-related factors (e.g., of letters, sounds, letter–sound relationships [phonology, orthography], functions of print [pragmatics], words [semantics], sentences [syntax]).
- Phonological-based working memory or phonological memory (and processes).
- Comprehension capabilities (i.e., the development of textual, intertextual, and cultural prior knowledge, metacognitive, and self-regulatory skills). (p. 186)

It is important to discuss a few more points about the QSH, especially how it differs from other developmental similarity models, particularly the *Developmental Lag Theory* (Stanovich and his collaborators). The QSH is concerned with the development (manner) of language and literacy, not with the rate or amount within a specified timeframe.

It does not matter whether individuals are learning a language or developing literacy skills on age or grade level, or below/above age or grade level. The crux is that the manner of acquisition is *similar*. Thus, d/Dhh students proceed through the same developmental stages, make roughly the same errors, and use roughly the same effective language/literacy strategies as their typical literacy counterparts. Of course, because the quantitative (rate and amount) development may be delayed, these students will require special instructional enhancements and an enriched intensity of instruction to achieve developmental milestones—albeit at a later timeframe.

The above discussion supports the assumption that teachers of students with disabilities, including d/Dhh students, should be familiar with the general development of language and literacy of typical learners. This general development should provide implications for the development and use of effective instructional strategies. These strategies need to be differentiated as needed. Albeit controversial, the QSH maintains that it is not necessary to use a separate language or literacy curriculum for d/Dhh students or for other students in Special Education programs. The general education curriculum, particularly for students who are d/Dhh with disabilities (or have additional disabilities) or non-d/Dhh students with disabilities, may need to be supplemented with other materials.

It should be highlighted that the QSH maintains that the comparison group is typical language-literacy learners, not “hearing” language-literacy learners. That is, the performance of typical learners should be compared to that of struggling learners. The comparison groups should not be “hearing” versus “d/Deaf.” Consider this: Typical language-literacy learners may be comprised of “hearing,” “d/Deaf or hard of hearing,” or even learners with learning disabilities or emotional disabilities. Namely, some, if not many, of these children, despite their “disabilities,” are learning language and literacy at age or grade level.

Obviously, struggling learners may contain a number of children with disabilities or those who are at risk. Nevertheless, by keeping the focus on the developmental stages of typical learners, it may be possible to develop individual profiles for instructional purposes related to the fundamentals of language and literacy (National Early Literacy Panel, 2008; National Reading Panel, 2000). This is not to suggest that it is not important to understand the effects of a disability or condition such as deafness or blindness or autism. However, it is argued that this understanding of a “disability” may not be sufficient for developing the skills of language and literacy, particularly a language that has a written counterpart. It may be important to incorporate the use of a signed language for some d/Dhh students; however, developing competent skills in a “spoken language” (expressively or receptively via speech and/or signs) is critical for the development of print based on that spoken or through-the-air form (e.g., Adams, 1990, 1994, 2002; Perfetti & Sandak, 2000; Storch & Whitehurst, 2002).

It should be emphasized that spoken language (through-the-air) competency does not mean the development of intelligible speech per se; rather, this type of competency is internalized cognitively. A further treatment of this complex issue can be found in Paul et al. (2013).

### Controversies Surrounding the QSH

To address the third question regarding the QSH, posed at the beginning of this article, this section focuses on issues related to phonology and selected perspectives regarding Deaf epistemology. Although some of the information in this section is based on research, other points are interpretations based on the experiences of the present author.

Previously, it was mentioned that one of the major objections to the QSH was the strong assertion that a “sound” phonology was critical for the development of English language and literacy. It is argued that this sound phonology facilitates the understanding of the alphabet writing system, particularly the relationships between graphemes (letters) and sounds (phonemes). On the other hand, it has been proposed that a “visual phonology,” (of a signed language) along with fingerspelling and the use of English orthography, might be a comparable substitute for a sound phonology (e.g., Allen et al., 2009; McQuarrie & Parrila, 2014). The present researcher has argued that a visual phonology is limited beyond the early English literacy stages (Paul, 2009; Paul, 2014; Paul et al., 2013). For an in-depth discussion of this controversy, see Wang and Andrews (2014, 2015).

The debate regarding the use of a visual phonology or a sound phonology should continue, but it needs to proceed without the accusation of “audism,” often associated with a sound phonology because it is connected with the processes of “speech” and “hearing.” Deaf epistemologists have argued that the use of a sound phonology is inappropriate for many d/Dhh individuals. This assertion, motivated by the negative attitudes toward “speech” and “hearing,” often entails criticisms of cochlear implantations and other hearing devices (see discussions in Paul, 2009; Paul et al., 2013). Certainly, there is value in recommending the use of a signed language, particularly in a bilingual-bicultural educational program—and, perhaps, for some deaf students who struggle with the acquisition of a phonemic language such as English. Nevertheless, the merits of a visual phonology or the effects of a signed language or the effects of cochlear implantations on the development of language and literacy, should be investigated empirically.

## CONCLUSION

### Summary of the QSH

The following is a list of a few summative points on the QSH:

- The QSH is based on a synthesis of research on the acquisition of through-the-air English (i.e., speaking and/or signing) and English literacy (i.e., reading and writing).
- The QSH provides an indirect rationale for the development of inclusive educational programs.
- The QSH provides a strong direct rationale for “access to the general education curriculum.” There is no need for a separate curriculum for Special Education students, albeit differentiation and additional supplements may be necessary.
- With respect to the acquisition of English:
  - a. The acquisition of English by any individual is developmentally or qualitatively similar to that of native learners/speakers and to that of typical language/literacy learners of English.
  - b. Errors are developmental, not deviant. This is even true for second language learners of English.
  - c. There are certain fundamentals that facilitate the acquisition process. These fundamentals apply to the learning of English as either a first or second language. The fundamentals are associated with the structure of English language or English literacy.
- To assert that the overall acquisition and development (i.e., manner) of English is qualitatively or developmentally similar evokes the integration of two broad components, at least: Disciplinary structure and a critical or optimal period.
  - Understanding the structure of the discipline is critical to minimize the mismatch between the cognitive capability of the individual and their learning via the instruction of the discipline.
  - Critical or optimal period refers to a timeframe for maximizing the acquisition and beneficial effects of a bona fide through-the-air language as well as for print literacy.
  - The timeline of this acquisition affects the subsequent development of other disciplines such as literacy, mathematics, science, and so on—that is, the “academic language.”

### Future Research

There is a need for additional research on the merits of the QSH, including whether it can be applied to the acquisition of mathematics and science and, specifically, to other languages.

With respect to language and literacy in English-speaking countries, such research should address issues such as the non-unitary aspects of both English language and English literacy, the effects of the diversity of demographics in d/Deaf and hard of hearing children and adolescents, and the strengths and limitations of assessments, research designs, and instructional practices (e.g., Paul & Lee, 2010; Paul et al., 2013). Research should be influenced by both internal-driven models (i.e., research on d/Dhh students) and external-driven models (i.e., applying principles from the larger field of English language and literacy) (Paul, 2021). In sum, the QSH is not a one-size-fit-all framework; however, it is an effective starting point to understand and improve the language and literacy development of d/Deaf and hard of hearing individuals.

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