

2020-11

# American sign language interpreters in public schools: an illusion of inclusion that perpetuates language deprivation

---

Naomi Caselli, Hall Wyatte, Henner Jonathan. 2020. "American Sign Language Interpreters in Public Schools: An Illusion of Inclusion that Perpetuates Language Deprivation." *Maternal and Child Health Journal*, Volume 24, pp. 1323 - 1329. <https://doi.org/10.1007/s10995-020-02975-7>  
<https://hdl.handle.net/2144/41846>

*Downloaded from DSpace Repository, DSpace Institution's institutional repository*

American Sign Language Interpreters in Public Schools:  
An Illusion of Inclusion that Perpetuates Language Deprivation

Naomi K. Caselli<sup>1</sup>, Wyatt C. Hall<sup>2</sup>, Jonathan Henner<sup>3</sup>

Boston University<sup>1</sup>

University of Rochester Medical Center<sup>2</sup>

University of North Carolina Greensboro<sup>3</sup>

Author Note

Research reported in this publication was supported by the National Institute On Deafness And Other Communication Disorders of the National Institutes of Health under Award Number R21DC016104. Wyatt Hall was supported by the University of Rochester CTSA award number 3 UL1 TR002001-03S2 from the National Center for Advancing Translational Sciences of the National Institutes of Health. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. This work is also supported by National Science Foundation grants BCS 1625793 and 1918252 to Naomi Caselli.

Correspondence concerning this article should be addressed to Naomi K. Caselli, Wheelock College of Education and Human Development, Boston University, 2 Silber Way, 3<sup>rd</sup> Floor, Boston, MA, 02215 ([nkc@bu.edu](mailto:nkc@bu.edu)).

**Abstract**

**Purpose:** Many deaf children have limited access to language, spoken or signed, during early childhood – which has damaging effects on many aspects of development. There has been a recent shift to consider deafness and language deprivation as separate but related conditions. As such, educational plans should differentiate between services related to deafness and services related to language deprivation.

**Description:** Many deaf children attend mainstream public schools, and the primary service offered to students who use American Sign Language (ASL) is generally a sign language interpreter.

**Assessment:** We argue that while sign language interpreters can be an effective accommodation for deafness (i.e., students who are deaf and *not* language-deprived), there is no reason to believe they are an effective accommodation for language deprivation (i.e., students who are deaf *and* language-deprived).

**Conclusion:** Using interpreters instead of appropriate educational supports may exacerbate symptoms of language deprivation by prolonging the period of time a child goes with limited access to language.

**Significance**

Interpreters are widely used in deaf education, but the empirical record on the efficacy of interpreted education is sparse. This paper examines the use of sign language interpreters in deaf education through the lens of an emerging understanding of deaf children that separates hearing status from language deprivation (Hall, 2017). We review the (lack of) evidence that interpreted education is an effective intervention for children at risk for language deprivation, and argue that there is reason to believe it may actually be harmful to children at risk for language deprivation.

**Keywords:** *Deaf, hard of hearing, language deprivation, sign language, interpreter*

## Introduction

A strong link exists between education and health. A classic example is that education often leads to higher-paying jobs which in turn lead to healthier living (e.g., good health insurance, reduced stress, improved health literacy). Education also plays an important role in the development of social and psychological skills that promote better health. We present one example of a relationship between education and health whereby impoverished educational environments may actually cause or exacerbate negative health outcomes in children who are born deaf or hard of hearing (hereafter, ‘deaf’). In this paper we describe a common practice that is intended to support deaf children—the use of sign language interpreters in a mainstream<sup>1</sup> classroom—and argue that improper use of interpreters can actually have serious negative health implications.

Even with available interventions and technologies, half of all elementary-aged deaf children with cochlear implants have spoken language skills below the 16<sup>th</sup> percentile (Geers et al., 2017<sup>2</sup>). Spoken language outcomes among deaf children are highly variable and often poor (e.g., Hoffman, Tiddens, & Quittner, 2018). If exposed early, deaf children can develop native proficiency in a sign language like American Sign Language (ASL; Petitto, 2000). Most parents of deaf children, however, are hearing (Mitchell & Karchmer, 2004) and the majority of families do not use a sign language at home (Mitchell & Karchmer, 2005). This means that most deaf children are at risk for language deprivation in that they have limited exposure to fully accessible language<sup>3</sup> during early childhood. Language deprivation measurably harms language proficiency and/or development in domains that depend on language (e.g., cognitive, academic, socioemotional development; see Hall, 2017 for a review) .

---

<sup>1</sup> We recognize that the term *inclusive* is often used to describe an educational setting in which a disabled child is placed into the general education classroom. In recognition that such classrooms are not meaningfully inclusive for signing deaf children (e.g., Murray, Snodden, De Meulder, & Underwood, 2018, Murray, De Meulder, le Maire, 2018), we use the term *mainstreamed* instead.

<sup>2</sup> Geers et al., (2017) made claims about the use of sign language that were wholly unfounded, and did not highlight what, in our view, was the most noteworthy finding from the study: the majority of deaf children did not successfully learn spoken language. See Hall, Hall, & Caselli (2019) for an analysis.

<sup>3</sup> We use the term “language” inclusively, as it is generally understood by linguists, to refer to spoken languages and variants (e.g., English, Arabic, African American Vernacular English), and signed languages (e.g., ASL, British Sign Language, Kenyan Sign Language).

Language deprivation has lasting consequences for a child's ability to learn a first language (Mayberry & Kluender, 2018), as well as academic achievement (Henner et al., 2016), socio-emotional and cognitive development (Schick et al., 2007), and brain development (Mayberry et al., 2011). There is a growing body of literature describing language deprivation among deaf children (e.g., Humphries et al., 2012; Hall, 2017; Henner et al., 2018; Hall, Hall, & Caselli, 2019, Murray, Hall, & Snoddon, 2019). Our goal here is to use this framework that differentiates between deafness<sup>4</sup> and language deprivation in order to reconsider a common accommodation that is provided to deaf children in mainstreamed pre-k-12 classrooms: an ASL-English interpreter (hereupon "interpreter"). We focus here on the ASL-English interpreters in the United States context because the laws and practices around if and how interpreters are used in deaf education differ around the world, but parallel circumstances exist elsewhere and with interpreters of other signed and spoken languages.

Deafness and language deprivation affect children in different ways—the former is an audiological diagnosis and the latter is an acquired consequence of limited language input. The two merit different kinds of support services (Table 1). Though most deaf children are at risk for language deprivation, not all deaf children are language-deprived and vice versa. Barring additional diagnoses, deaf children have age-appropriate language proficiency in at least one language, and primarily need *access* to the classroom in whatever language(s) they know.<sup>5</sup> In contrast, language-deprived children need *intervention* to support language acquisition. The difference between deafness and language deprivation parallels a widely accepted distinction between speech (a means of transmitting language) and language (structured systems of symbols for encoding meaning). Deafness affects the way that language is transmitted, while language deprivation affects the entire linguistic system.

---

<sup>4</sup> We recognize that some people find the label *deafness* offensive, and medicalizes a cultural group. In the absence of a better alternative, we use this term judiciously and narrowly as clinical terms to refer to audiological statuses.

<sup>5</sup> This is an oversimplification, of course. Deaf children without language deprivation often benefit from supports beyond access (e.g., literacy instruction designed for deaf children, guidance on strategies for adapting to a world predominantly designed by and for hearing people).

Table 1. The educational profiles of deaf vs. language-deprived students.

	<b>Impacts</b>	<b>Educational Needs</b>	<b>Example Accommodations</b>
<b>Deafness</b>	Auditory access to spoken language and other sounds	Access to high-quality education	Direct instruction Deaf role models and peers ASL interpreter
<b>Language Deprivation</b>	Sign language proficiency Spoken language proficiency Literacy Academic achievement Socio-emotional well-being Cognitive development Brain development	Learn a first language Overcome any effects of language deprivation Access to high-quality education and a language-rich environment	Language immersion Explicit language instruction Trauma recovery counseling

#### Deaf Education and the use of Educational Interpreters

Schools and programs for deaf children exist whose primary mission is to provide rich language environments for children to learn ASL, and are staffed by professionals with specialized expertise in educating children at risk for language deprivation. Because deafness is a relatively low-incidence population, these programs generally draw students from many neighboring (or more distant) districts. Placement in a school or program for deaf children outside of a resident district depends on a federal law that mandates that a child's local district is responsible to provide a free and appropriate education to students with disabilities (the Individuals with Disabilities Education Act). A child's local district may send the child to a specialized school if the neighborhood school cannot provide the necessary educational environment. However, most deaf children in the United States (80%) are educated in mainstream environments, not deaf education schools (GRI, 2012). For the 39% of deaf children who use sign language in school (GRI, 2012), an interpreter may be the primary accommodation.

Interpreters facilitate communication between signers and non-signers by reproducing what is said in one language in another language (e.g., English to ASL and vice versa). The practice of hiring educational sign language interpreters is unique to deaf education; spoken language interpreters (e.g., Spanish-English interpreters) are rarely provided in k-12 schools. In many mainstream classrooms, there is one deaf student in a room of hearing non-signers. Interpreters in educational environments often work alone, or occasionally in a team of two. The interpreter(s) and deaf student(s) and sometimes an itinerant

deaf educator are often the only people in the school who know ASL. The same interpreter may be hired to interpret all school-related activities for a year, and it is not uncommon for an interpreter to follow a student year after year. K-12 interpreting accounts for 21% of the interpreting work nationwide<sup>6</sup> (RID, 2016).

The move to use interpreters as a primary accommodation for deaf students is consistent with a trend internationally across contexts to “favor giving access to services through sign language interpreters instead of via language-concordant services, where the client and service provider use the same language” (see De Meulder & Hualand, 2019 for a review). The trend of “including” deaf students via interpreters is puzzling, as mediated access to education clearly contradicts the spirit of inclusion intended by most legislation (e.g., the Individuals with Disabilities Education Act, the UN Convention of the Rights of Persons with Disabilities; Murray, De Meulder, & Le Maire, 2018).

#### Mismatch Between the Needs of Language-Deprived Students and Interpreting Services

While interpreters may or may not be a reasonable accommodation for deafness, we argue that there is no evidence that interpreters can singlehandedly meet the unique needs of children who are language-deprived. Interpreters are generally not trained in language education, and are not afforded the time or authority to provide such instruction. Though infants are able to learn language passively, there are limits to implicit language learning among older children (Ellis, 2009; Hulstijn, 2005; Schmidt, 1992). Older children learning a second language benefit from explicit language instruction (Spada & Tomita, 2010). We know of no empirical evidence that children can reliably overcome the consequences of language deprivation without explicit, immersive language instruction.

An interpreter may be the sole source of sign language exposure for a child. Children learn language best from multiple language users and particularly benefit from immersion in a peer group of language users (Gagne, 2017; Swain, Brooks, & Toealli-Beller, 2002). Interpreted interactions cannot

---

<sup>6</sup> For reference, there are currently 14,284 members of the national professional organization for sign language interpreters (RID, 2018), and as we review in the following sections many educational interpreters may not be affiliated with this certifying body.

substitute for direct communication with peers (Winston, 1994). Peer relationships are especially important for children who have language deprivation, as language deprivation has negative effects on children's social development. Further, as outlined below, interpreters have varying, often low, levels of sign language proficiency. We know of no empirical evidence that children can reliably overcome the consequences of language deprivation via a single language model, even if the interpreter is a highly proficient signer but particularly if that person is not a proficient signer.

Interpreted language is sometimes the sole source of language exposure for a child. As we will describe in more depth in the following section, interpreted content has a high error rate (conservatively 26-58% of utterances; Nicodemus & Emmorey, 2013). This is problematic because it requires students to mentally fill in the gaps to compensate for miscommunications. Even an error-free interpretation is not the same as direct communication; interpretations often include long pauses or other disfluencies. We know of no empirical evidence that children can reliably overcome the consequences of language deprivation primarily from interpreted language.

Schools have a legal responsibility to provide a free and appropriate education, and *Endrew v. Douglas County* specify that IEPs must be "reasonably calculated to enable the child to make progress appropriate in light of the child's circumstances." Though some might argue (and we would agree) that using interpreters is better than nothing, *Endrew v. Douglas County* makes clear that the legal standard is greater than *de minimis* – rather, students must be able to make reasonable progress. We know of no empirical evidence that children with language deprivation can make reasonable progress in language acquisition primarily through interpreted education.

Using interpreters in lieu of educational supports tailored to language deprivation may exacerbate the symptoms of language deprivation. There is a linear relationship between age of language acquisition and language proficiency: the longer a child spends without language, the poorer their outcomes are likely to be (e.g., Penicaud et al., 2013). If a child is unable to learn a useable first language via an interpreter, years spent relying solely on an interpreter to support language acquisition may prolong the period of language deprivation, thereby worsening outcomes. In this case, progress toward learning goals may not



even be *de minimis*. Instead, the illusion that the child is being provided access may prevent educational teams from doing more to support language acquisition, further extending the period of time the child spends in an impoverished language environment.

As such, we argue *interpreters are not an appropriate intervention for language deprivation*. To be clear, we are arguing to limit the use of ASL interpreters – not the use of ASL. As has been described elsewhere (Napoli et al., 2015), there are many good reasons for children to use a sign language not least because spoken language outcomes are unpredictable and often poor (e.g., Geers et al., 2017; Hoffman, Tiddens, & Quittner, 2018). We believe that interpreting can be an effective means of providing access for deaf children, even for children with language deprivation, when used in combination with other services (e.g., to provide access to a course or sports team). Our contention is simply that interpreters should not replace interventions for language deprivation. In the following section, we review some considerations in choosing to use interpreters, and conclude with suggestions for alternatives to educational interpreters.

#### *Considerations when considering the hiring of an interpreter*

Interpreters vary both in ASL fluency and interpreting ability. Thirty-one states require that interpreters score at least a 3.5 on a 0-5 scale on the Educational Interpreter Performance Assessment (EIPA). The EIPA characterizes interpreters with such scores as having “knowledge of basic vocabulary, but lack[ing] vocabulary for more technical, complex, or academic topics,” and “sign[ing] in a fairly fluent manner” with some errors in sign production, grammatical production, and notes that these interpreters may require repetition or assistance in order to understand ASL. Eleven additional states have slightly stricter requirements (4.0 out of 5), but interpreters may still “have difficulty with complex topics or rapid turn taking” (EIPA Rating System). In practice, the competence of interpreters may be even lower. In a study of the 2,091 interpreters across the US who took the EIPA assessment, more than 60% had scores lower than a 3.5 (Schick et al., 2005). In another early study, some 65% of educational interpreters surveyed were not certified, and 61% were not proficient or only somewhat proficient in sign language at the time of hire (Jones, Clark, & Soltz, 1997). Another study of two rural states found that of

63 interpreters, none were certified (Yarger, 2001). Many states have a “provisional” status that allows people with even lower scores to work as interpreters temporarily (e.g., Montana allows those with a competency level of 2.5 to work for three years; Johnson, Taylor, Schick, & Brown, 2018). The EIPA itself recommends that people with such low skills should not work in classroom settings, as they have “only basic sign vocabulary” and their “lack of fluency... often interfere[s] with communication” (EIPA Rating System).

In addition to varying levels of sign language proficiency and cultural competence, the process of interpreting introduces additional opportunities for miscommunication. Nicodemus and Emmorey (2013) found that expert interpreters (national certified with more than ten years of experience) had a 25.8% error rate, and novice interpreters had a 58.3% error rate in interpreting three-minute personal narratives and informational texts. This error rate may be even higher in more linguistically demanding scenarios (e.g., trigonometry). It may be especially difficult for students to mentally fill in the gaps of an error-filled interpretation because the topics covered in school are, by design, subjects they are not deeply familiar with.

Lastly, accuracy rates steeply decline due to physical and mental fatigue after about thirty minutes of interpreting (Brasel, 1976). Interpreters who work in other contexts (e.g., higher education, professional settings) generally work in pairs and trade off every twenty minutes to preserve the quality of interpretation. In contrast, it is not uncommon for educational interpreters to work continuously all day alone. The error rate in educational interpreting may be even higher than 25.8%-58.3%, as the study above involved interpreting for only about three minutes.

We add one final note on a common (mis)use of interpreters in educational settings focusing on language assessment. The first step in addressing language deprivation is identification which, at minimum, entails testing children’s varied language proficiency (e.g. in both home and community languages). Without standardized assessments of language deprivation, schools may be left to use subjective impressions of the child’s language skills. An interpreter may be the only member of the educational team that knows ASL and could comment on the child’s ASL proficiency. Interpreters,

however, generally have limited ASL proficiency, are not trained to provide ASL assessment, and are likely to be ill-prepared to make an informal evaluation (Schick, Williams, & Bolster, 1999; Schick, Williams, & Kupermintz, 2005). Even if interpreters are aware that children have limited language proficiency, they may not have the training or authority to inform school personnel. The code of ethics governing sign language interpreters in the United States may further discourage interpreters from communicating concerns with school personnel, as it indicates interpreters should not “provide counsel, advice, or personal opinions.” Practically, interpreters are also unable to share their thoughts in a meeting if they are simultaneously interpreting the meeting.

Because of these limitations, we believe that interpreters are a non-optimal educational option for children who are language-deprived. While interpreters may be a *more* appropriate accommodation for deaf students who are not language-deprived than those with language deprivation, interpreted education may not be equitable educational environment even for children who are not language-deprived. See Murray, De Meulder, & le Maire (2018) and Thoutenhoof (2005) for arguments here.

#### Conclusions for Practice

With an emerging understanding that deafness and language deprivation are separate but related conditions, it is incumbent upon educational teams to 1) evaluate deaf children for language deprivation, 2) identify the needs that arise as a result of language deprivation, and 3) provide services or environments that meet those needs. While every child’s needs are unique, children with language deprivation generally need educational environments that are rich with accessible linguistic input and meaningful linguistic exchanges with both adults and peers, convivial and accessible social environments, and staffed by educators with expertise in language deprivation. Until robust diagnostic tools for language deprivation are available, we urge schools and families to act proactively and assume deaf children need language education including explicit instruction from professionals who have training in language education, and immersive language environments where children have ample opportunities to interact with ASL fluent peers and adults..

The most straightforward alternative to educational interpreters is to take advantage of the many schools and programs nationwide that are designed to provide a rich, immersive language-learning environment for language-deprived children. Bilingual schools for deaf children are staffed by people who have expertise, often advanced degrees, in educating language-deprived students. By congregating deaf students, these schools can provide students a social system replete with peers and adults who can communicate directly in ASL. These environments play a crucial role in language and social development, and can affirm students' socio-cultural identity.

Children's local districts may be reticent to send their students to specialized schools for a number of reasons (e.g., expense, the misguided notion that inclusion entails sending children to neighborhood schools; Trahan, Wolsey, Clark, 2018), preferring to educate their students in-house. It may be possible to hire staff with expertise in supporting delayed first language acquisition, but we expect it will be challenging for most districts to provide the necessary social and linguistic environment, as doing so would require a critical mass of fluent signing children in the local district. As such, many districts will have trouble independently providing the necessary environments.

There may also be geographical and/or financial constraints, and require more creative solutions. One promising avenue is the use of remote learning where students from around the country could participate in specialized programming online. Video conferencing may enable students to access high quality instruction and a classroom of fluent signing peers that would otherwise be unavailable in their local district. However, more research is needed to examine the effectiveness of distance or computerized education for providing language access for deaf children. Additionally, districts could build capacity locally, hiring fluent deaf signers to participate as language models in mainstream classroom activities (e.g., as teachers assistants), or provide teacher training to people who are fluent in ASL.

We are calling for systemic change in practice — individuals cannot singlehandedly make the necessary changes. Schools should consider using educational interpreters only in exceptional circumstances. Interpreters should not accept work in educational contexts without clear evidence that doing so would not hamper students' ability to thrive. Interpreters should counsel those requesting their

services about safer alternatives, and should work to counter the misconception that educational interpreting is an acceptable accommodation for most deaf children. Professional organizations for sign language interpreters should openly condemn the practice of educational interpreting except in rare circumstances. Professional organizations could lobby for legislation to minimize use of educational interpreters. Certifying bodies could cease to offer credentials for educational interpreters, which lend credence to this harmful practice.

With interpreters, deaf people can more easily engage in a host of activities that would otherwise been inaccessible, which ultimately improves health and wellbeing across the lifespan. At the same time, interpreters can give administrators and parents an “illusion of inclusion” (Winston, 1994; Russell & McLeod, 2009) leaving deaf children without the support they need to mitigate the consequences of language deprivation, and in some cases putting them at further risk by prolonging the period of time spent without a complete first language. These children need specialized interventions tailored to language deprivation, not just interpreters. As such, interpreters should not be used as an intervention for language deprivation.

#### References

- Brasel, B. (1976). The effects of fatigue on the competence of interpreters for the deaf. In H. Murphy (Ed.), *Selected readings in the integration of Deaf students at CSUN* (pp.19–22). Center on Deafness, California State University, Northridge
- Ellis, R. (2009). *Implicit and explicit knowledge in second language learning, testing and teaching* (Second language acquisition; 42). Buffalo: Multilingual Matters.
- Gagne, D. L. (2017). *With a little help from my friends: The contributions of a peer language network on the conventionalization of space in an emerging language* (Doctoral dissertation). Retrieved from <https://opencommons.uconn.edu/dissertations/1493/>
- Gallaudet Research Institute. (2012). *Annual Survey of Deaf and Hard of Hearing Children and Youth 2009-2010 Regional and National Summary*. Retrieved from [https://research.gallaudet.edu/Demographics/2010\\_National\\_Summary.pdf](https://research.gallaudet.edu/Demographics/2010_National_Summary.pdf)

- Geers, A. E., Mitchell, C. M., Warner-Czyz, A., Wang, N., Eisenberg, L. S., & CDaCI Investigative Team. (2017). Early sign language exposure and cochlear implantation benefits. *Pediatrics, 140*(1)
- Hall, W. C. (2017). What you don't know can hurt you: The risk of language deprivation by impairing sign language development in deaf children. *Maternal and Child Health Journal, 21*(5), 961-965.
- Hall, M. L., Hall, W. C., & Caselli, N. K. (2019). Deaf children need language, not (just) speech. *First Language, 39*(4), 367-395.
- Hall, W. C., Levin, L. L., & Anderson, M. L. (2017). Language deprivation syndrome: A possible neurodevelopmental disorder with sociocultural origins. *Social Psychiatry and Psychiatric Epidemiology, 52*(6), 761-776.
- Henner, J., Caldwell-Harris, C. L., Novogrodsky, R., & Hoffmeister, R. (2016). American sign language syntax and analogical reasoning skills are influenced by early acquisition and age of entry to signing schools for the deaf. *Frontiers in Psychology, 7*, 1982.
- Hoffman, M., Tiddens, E., Quittner, A. L., & CDaCI Investigative Team. (2018). Comparisons of visual attention in school-age children with cochlear implants versus hearing peers and normative data. *Hearing research, 359*, 91-100.
- Hulstijn, J. H. (2005). Theoretical and empirical issues in the study of implicit and explicit second-language learning: Introduction. *Studies in Second Language Acquisition, 27*(2), 129-140.
- Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D. J., Padden, C., Rathmann, C., & Smith, S. R. (2012). Language acquisition for deaf children: Reducing the harms of zero tolerance to the use of alternative approaches. *Harm Reduction Journal, 9*(1), 16.
- Jones, B. E., Clark, G. M., & Soltz, D. F. (1997). Characteristics and practices of sign language interpreters in inclusive education programs. *Exceptional Children, 63*(2), 257-268.
- Mayberry, R. I., & Kluender, R. (2018). Rethinking the critical period for language: New insights into an old question from american sign language. *Bilingualism: Language and Cognition, 21*(5), 886-905.
- Mitchell, R. E., & Karchmer, M. (2004). Chasing the mythical ten percent: Parental hearing status of deaf and hard of hearing students in the united states. *Sign Language Studies, 4*(2), 138-163.
- Mitchell, R. E., & Karchmer, M. A. (2005). Parental hearing status and signing among deaf and hard of hearing students. *Sign Language Studies, 5*(2), 231-244.

- Murray, J. J., Hall, W. C., & Snoddon, K. (2019). Education and health of children with hearing loss: the necessity of signed languages. *World Health Organization. Bulletin of the World Health Organization, 97*(10), 711-716.
- Murray, J. J., Snoddon, K., De Meulder, M., & Underwood, K. (2018). Intersectional inclusion for deaf learners: moving beyond General Comment No. 4 on Article 24 of the United Nations Convention on the Rights of Persons with Disabilities. *International Journal of Inclusive Education, 1-15*.
- Napoli, D. J., Mellon, N. K., Niparko, J. K., Rathmann, C., Mathur, G., Humphries, T., ... & Lantos, J. D. (2015). Should all deaf children learn sign language? *Pediatrics, 136*(1), 170-176.
- Nicodemus, B., & Emmorey, K. (2013). Direction asymmetries in spoken and signed language interpreting. *Bilingualism: Language and Cognition, 16*(3), 624-636.
- Petitto, L. A. 2000. The Acquisition of Natural Signed Languages: Lessons in the Nature of Human Language and Its Biological Foundations. In *Language Acquisition by Eye*, C. Chamberlain, J. P. Morford, and R. I. Mayberry, 41–50. Mahwah, N.J.: Erlbaum.
- Registry of Interpreters for the Deaf. (2016). Job/Task Analysis for National Interpreter Certification (NIC). Retrieved from <https://rid.org/2018-annual-report/>
- Registry of Interpreters for the Deaf. (2018). Annual Report. Retrieved from <https://www.casli.org/wp-content/uploads/2017/07/NIC-JTA-Report.pdf>
- Russell, D., & McLeod, J. (2009). Educational interpreting: Multiple perspectives of our work. In J. Mole (Ed.), *International Perspectives on Educational Interpreting* (pp. 128-144). Brassington, UK: Direct Learned Services, Ltd.
- Schick, B., De Villiers, P., De Villiers, J., & Hoffmeister, R. (2007). Language and theory of mind: A study of deaf children. *Child Development, 78*(2), 376-396.
- Schick, B., Williams, K., & Bolster, L. (1999). Skill levels of educational interpreters working in public schools. *Journal of Deaf Studies and Deaf Education, 4*(2), 144-155.
- Schick, B., Williams, K., & Kupermintz, H. (2005). Look who's being left behind: Educational interpreters and access to education for deaf and hard-of-hearing students. *Journal of Deaf Studies and Deaf Education, 11*(1), 3-20.
- Schmidt, R. (1992). Awareness and second language acquisition. *Annual Review of Applied Linguistics, 13*, 206-226.

- Spada, N., & Tomita, Y. (2010). Interactions between type of instruction and type of language feature: A meta-analysis. *Language Learning, 60*(2), 263-308.
- Swain, M., Brooks, L., & Toeall-Bcller, A. (2002). 9. peer-peer dialogue as a means of second language. *Annual Review of Applied Linguistics, 22*, 171-185.
- Thoutenhoofd, E. D. (2005). The sign language interpreter in inclusive education: Power of Authority and limits of objectivism. *The Translator, 11*(2), 237-258.
- Winston, E. A. (1994). An Interpreted Education: Inclusion or Exclusion? In *Implications and Complications for Deaf Students of the Full Inclusion Movement*, ed. R. C. Johnson and O. P. Cohen, ed., 55-62. Gallaudet Research Institute Occasional Paper 94-2. Washington, D.C.: Gallaudet University.
- Yarger, C. C. (2001). Educational interpreting: Understanding the rural experience. *American Annals of the Deaf, 146*(1), 16-30.