

Language Deprivation and Deaf Mental Health

Edited by Neil S. Glickman and
Wyatte C. Hall

1

Language Deprivation Syndrome

SANJAY GULATI

Introduction

Fifteen years ago, I was asked to evaluate a young deaf man with behavioral problems, labile emotions, and academic difficulties. Nothing in his educational, medical, or psychological testing history seemed to explain his presenting symptoms. He was superficially articulate, charming, and warm—yet his thinking was unusually concrete. He showed gaps in empathy with others and was prone to angrily acting out. Stymied, I speculated that rather than a mental illness, he had “some type of learning disability.”

I would now diagnose this patient with “language deprivation syndrome.” That is, even though he was educated in programs designed for deaf children, his brain was exposed to insufficient linguistic input in earliest childhood to foster the development of a *truly fluent* first language. Although he later learned a great deal more language, he continued to exhibit deficits in nearly every area of daily functioning, not merely in his language skills. These deficits persisted despite intensive (and expensive) remedial schooling and vocational support.

Perhaps once a century, a child with normal hearing experiences isolation from human contact so profound as to prevent learning a “mother tongue.” Among deaf children, by contrast, incomplete language acquisition is epidemic. Acquiring language—any language—is the greatest challenge that deaf children face. Yet the reality and the risks of language deprivation are barely noted in the scientific literature or among the hearing majority. As the example before shows, they are not even readily identified by supposed experts in deafness. Deaf children can be raised in loving homes, treated by medical specialists, fitted with high-tech electronic aids, and provided special education, yet still emerge from childhood with a devastating, permanent, and *preventable* disability.

Early language deprivation seems to cause a recognizable constellation of social, emotional, intellectual, and other consequences. I term this constellation

Language Deprivation *Syndrome* (LDS) to emphasize its internal coherence and its predictability. This name has the advantage of placing responsibility for a child's language and associated outcomes on the surrounding environment. Poor language outcomes, though frequently tolerated, are not "normal" for deaf people. It has the potential disadvantage, however, of exacerbating the pain and guilt that parents, educators, and medical professionals may feel when its seriousness in a particular child's case becomes evident. Language deprivation is often the unintended outcome of well-intentioned efforts to promote a child's language development. Caregivers' intentions, however, cannot substitute for children's actual outcomes. These have all too often been "swept under the rug" in educational and medical research.

Structurally speaking, LDS is incomplete neurodevelopment. Functionally, it is an intellectual disability. Because language mediates and underlies nearly every human activity, those seeking to understand LDS must explore concepts and research from a wide variety of fields. That no single authority takes responsibility for a child's language development may be the main reason the syndrome persists. I delve into some far-flung areas in the following, but as a clinician primarily, I will base this chapter mainly on direct experience with the language-deprived deaf patients whom I have evaluated or treated in various settings. These include my primary work sites at Harvard Medical School, the Deaf & Hard of Hearing Service at Cambridge Hospital, and the Deaf and Hard of Hearing Program at Boston Children's Hospital—as well as past experience at the Mental Health Unit for Deaf Persons at Westborough State Hospital (which was cofounded by this volume's co-editor Neil S. Glickman) and the Deaf schools and programs where I have consulted. Naturally, I owe innumerable patients, their families, and perceptive colleagues for their stories and insights into these complex issues.

Although the phrase "language deprivation syndrome" may be new, the observation, that deficits observed in some deaf people's life skills might be due not to sensory deprivation or to social impoverishment, but specifically to *language* deprivation, is not. Prior to the groundbreaking adoption of sign language into US public education in the nineteenth century, the New York Times described deaf people as existing "in a state of barbarism, unprovided with the most ordinary means of culture" (New York [Daily] Times, Sept 29, 1852). Decades of the successful use of American Sign Language (ASL), disseminated via state schools established nationwide, ended with the rise of "oralism." This philosophy of prioritizing the teaching of speech and lip-reading while banning, and even punishing, the use of sign language led to wholesale language deprivation among deaf people in the twentieth century. "In looking back to the educational methods formerly used with the deaf," said psychologist Edna Levine in 1968, "you would have seen each individual more or less encased in his own little glass tomb" (Rainer & Altshuler, 1968).

As the mental health disciplines emerged, pioneering practitioners published descriptions of LDS (See Altshuler, 1962; Glickman, 2009; Hall, Levin, &

Anderson, 2017; Levine, 1956; Myklebust, 1960; Vernon & Raifman, 1997). The initial understanding was sometimes tinged with condescension based on two assumptions: that deafness must represent a “loss” to the individual and that signed languages must be inferior to spoken. Some early terminology would now be considered pejorative, e.g., *surdophrenia* or *primitive personality disorder*, but a serious effort was begun to describe the lives and experiences of deaf people. In New York, a perceptive observer reviewed three classic descriptions and commented:

These three sets of results—Myklebust, Altshuler, and Levine—are remarkably consistent. However, the problem of explanation remains: one still doesn’t know the etiology of the problems the deaf have. A phenomenological-descriptive model is just a beginning. The actual language of the deaf must be examined in more detail. ...Just how much deprivation exists? At what point do the deaf fail conceptually, and how does this relate (if at all) to their emotional and social problems? Is sign language, which remains the most common means of communication amongst the American deaf, despite the efforts of all education for the deaf in the United States, a language, and does it have limitations? What part do experiential and language deprivation play in creating the condition of the deaf in the United States?

(Kohl, 1966)

Fifty years later, the answers to Kohl’s cogent questions have emerged with forceful clarity. The 1960s brought the recognition that sign languages are in fact the linguistic equals of spoken languages. The 1970s saw the rebirth of a confident Deaf culture whose members experience deafness as a valid and satisfying mode of human being. New research vividly demonstrates the brain’s time-sensitivity for acquiring language and begins to illuminate the neurological correlates of incomplete acquisition. We can now validate Kohl’s intuition that “the single greatest problem” deaf children face is in fact what he called “language disability” (Kohl, 1966).

In 1854, a merchant politely asked a customer to leave his store. When the customer ignored him, the owner tried to shove him out. The customer, who was deaf, later pled guilty to having stabbed the owner. In this unfortunate event, neither person seems fully responsible. A proprietor manhandled a recalcitrant customer. A deaf man defended himself in an unprovoked assault. A misunderstanding between deaf and hearing worlds seems at fault, a theme that can be traced continuously forward in Deaf history all the way to the current debate over “maladaptive cross-modal plasticity” that will be discussed as follows. In a bio-psycho-social-cultural model of mental health, such Deaf-hearing cultural issues loom large. They place a premium on the attitude with which we approach “deaf people’s problems” (Glickman, 2013). This chapter is written as this writer’s research and clinical work are

undertaken: with respect for deaf people’s actual lived experiences, and therefore with skepticism toward the narrow view of deafness as mere pathology.

How Does Language Deprivation Happen?

The existence of language deprivation is a corollary to the existence of a critical period for learning one’s first language. The most severe cases of deprivation therefore follow a child’s not being exposed to consistent and fully elaborated language during the entire critical period, approximately the first five years of life.

Each child’s brain and linguistic history is unique; each case of language deprivation is therefore also unique. Broadly speaking, congenitally deaf children are at greatest risk for deprivation while children who become deaf during the critical period are partly protected (examples of the latter include Helen Keller and the strident oral advocate David Wright). Children likely vary in the strength of their “language instinct” (Pinker, 1994)—their inbuilt avidity for language—and the rate and manner in which their critical periods close.

Geography is sometimes decisive: a child born deaf into a remote village may lack for both hearing aids and a local sign language. Such a child may grow up loved and well cared for but without linguistic communication. The ASL interpreter and activist Susan Schaller provided a moving account of one such case in her book, “A Man Without Words” (Schaller, 2012), documenting her passionate efforts to remediate the language deprivation of a man from rural Mexico. Although in countries where the education of deaf children is mandated, language deprivation as profound as that which Schaller describes is rarely seen *clinically*, this does not mean it is rare.

The same factors that impede language acquisition in the first place—geographic isolation, lack of educational opportunities and social services, lack of appreciation that the child (or now, adult) has specialized needs—can result in a language-deprived person’s remaining home with family, living homeless, being wrongly placed in an institution for intellectual disability (see Miller, 2016), or being jailed, all without recognition of the person’s specific deficits and needs. Such cases can come to light when a legal, medical, or behavioral problem appears or after a long-term support disappears.

Following profound deprivation, the amount of language that can be acquired, even after intensive exposure, is variable. In this regard, Schaller’s case was close to the median: “Ildefonso,” as she called him, acquired valuable ability to communicate, allowing him to better navigate the world. He did not achieve fluent language. Many such people acquire little language no matter how intense the exposure.

The author has observed only one case of the late acquisition of nearly fluent language. This case is presented with the individual’s permission here:

Iromilson, known as “Ro,” was born deaf on an island with no indigenous sign language and few services for deaf people. He roamed freely on his

bicycle, rarely attending school. He particularly enjoyed the harbor, where he watched fishing boats being built. He communicated via pantomime and “home signing.” Home signs are idiosyncratic gestures that arise naturally in each deaf person’s environment. Presumably they arise from the brain’s “language instinct” (Pinker, 1994) expressing itself in the absence of an actual language to acquire. Unfortunately, even the richest home sign, such as that developed by language-deprived deaf siblings, has never been found to reach the full grammatical power of true language.

Ro’s single mother moved her family to the United States in search of education for her son. He wandered Boston at all hours, “stole” a cell phone, and found himself psychiatrically hospitalized. There he vividly gestured the story of his good luck in finding a phone. After failed attempts in local schooling, he was placed in a residential, therapeutic Deaf school.

Ro, now 14, was at first unable to sit still in a classroom, but he had not entirely lost every young child’s intense hunger for language and near-magical capacity to absorb its grammatical “machinery.” His school was largely staffed, day and night, by fluently signing Deaf people. Over six years of intensive exposure, Ro acquired remarkably fluent ASL. He also mastered some spoken and written English.

Ro still rides his bicycle joyfully but can also engage in team sports. He has friends, and a girlfriend. He has learned a range of carpentry skills and expects to be fully employed. He admires his mother and feels grateful for the sacrifices she made on his behalf—nuanced, empathic thoughts of a type often absent in LDS. He does struggle with residual deficits in world knowledge and associated judgments and would be the first to admit that he can lack common sense. Unfortunately, his success story is vanishingly rare.

Characteristics of Deaf People with Language Deprivation Syndrome

In 1999, the author examined a series of 98 consecutive referrals to the Deaf Service at Cambridge Hospital. Each case was rated for severity of behavioral symptoms and for language fluency. The initial hypothesis was that being unable to solve social and emotional problems with words would lead to “acting out” emotions behaviorally. Despite the coarseness of the categorizations (chosen to ensure high interrater reliability), surprisingly significant correlations emerged: both dangerousness to oneself and dangerousness to others correlated strongly with language dysfluency.¹ *Indeed, nearly half of the variance in these deaf psychiatric patients’ aggressive behaviors seemed attributable to problems with language.* Figures 1.1–1.4 describe this dataset.²

Note that fewer than half of the patients in this sample demonstrated fluency in American Sign Language. In hindsight, with heightened awareness of the serious consequences of even mild language deficits, the language categories might more accurately be named mild, moderate, and severely dysfluent.

Age of First Language Exposure

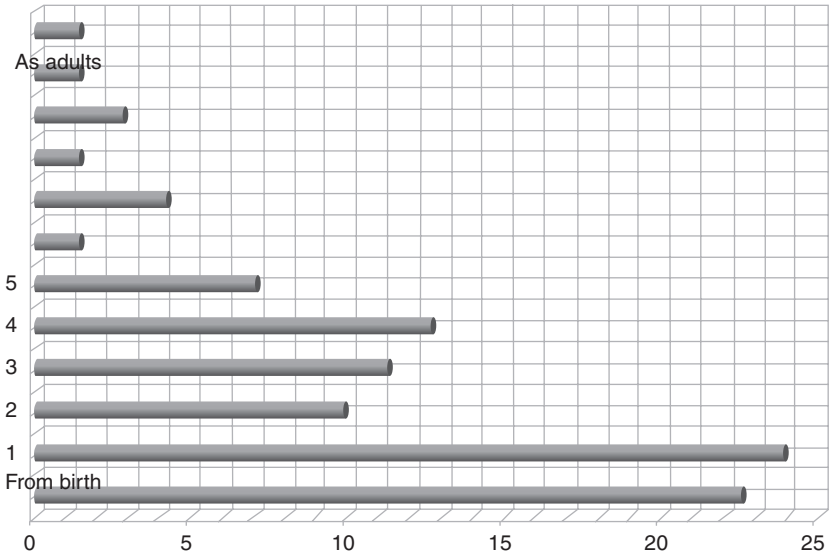


Figure 1.1 Age of first language exposure among 98 Deaf Service referrals, 1999

Dangerousness to Community

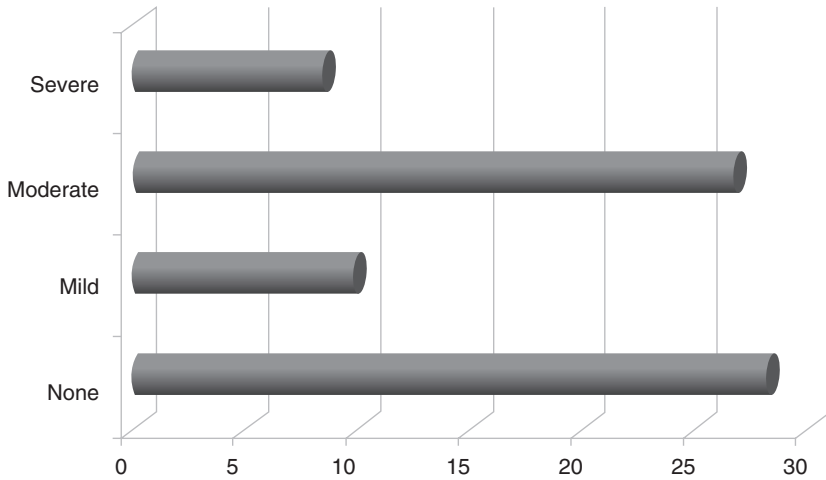


Figure 1.2 Dangerousness to community among 98 Deaf Service referrals

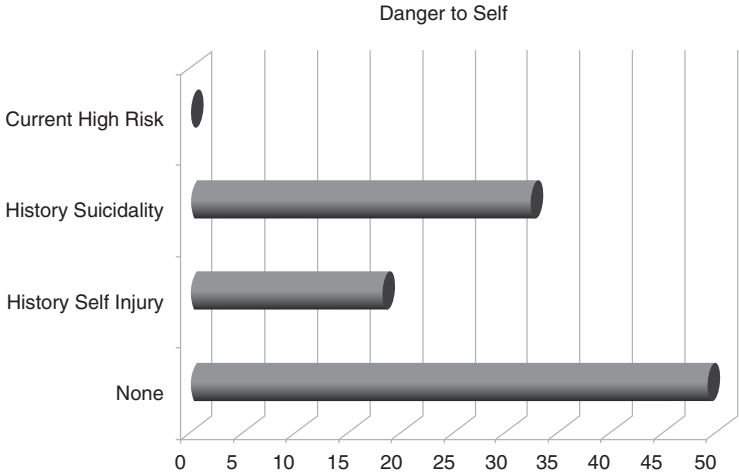


Figure 1.3 Dangerousness to self among 98 Deaf Service referrals

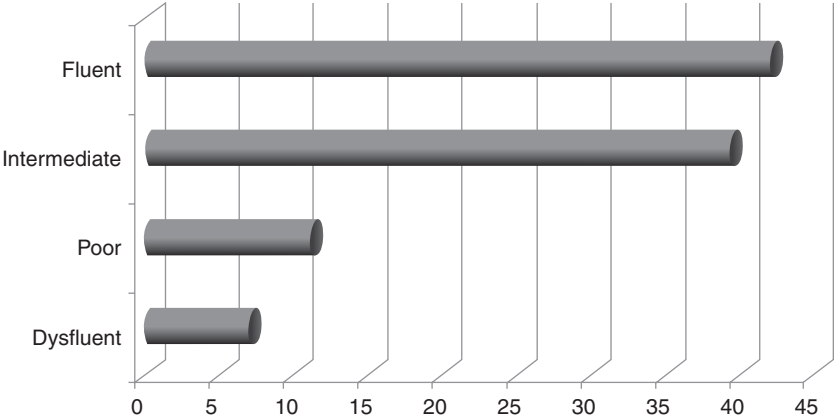


Figure 1.4 Sign Language fluency among 98 Deaf Service referrals

Following the aforementioned pilot work, the author compiled a list of potential descriptors for LDS from published reports and active professionals in the field. The incidence of 53 potential descriptors was then noted in the sample described earlier. The ten outstanding categories of LDS characteristics, presented as follows, paint a picture of LDS as seen in the mental health clinic.

Because data collection and analysis on an ever-expanding sample continue at the time of this writing, the findings here are preliminary. The discriminatory power of individual items relative to other psychiatric diagnoses remains to be determined, as do their independence from one another and prevalence at different degrees of language deprivation.

A Person with LDS May Superficially Appear to Use Sign Language Fluently, But on Closer Examination, Shows Characteristic Linguistic Deficits

Nearly every deaf person who experiences significant language deprivation eventually finds his or her way to some form of sign language, even if educated orally (Gregory, Bishop, & Sheldon, 1995). Late-deafened native users of spoken language, particularly the elderly, are much less likely to seek out sign language, as are mildly and moderately hard of hearing people, who face their own difficulties with social communication but rarely suffer from language deprivation.

To non-signers, the sign language of a person with LDS may be indistinguishable from that of a fluent signer; handshapes and movements can appear natural and impressively fast. Fluent signers (particularly native signers), however, recognize the absence of features and functions of full language, and the more general cognitive and emotional “gestalt” of a person who has experienced language deprivation. In the most severe cases, the language of a deprived person might bear no more relation to fluent ASL than “Me Tarzan, you Jane” does to fluent English.

The characteristic features lacking in the “visual-gestural” language system of those with LDS include tenses, plurals, and standard sentence structures. There is a relative simplification of grammar, so that others must guess at the intended meaning. The nuances involved in this type of guesswork are infinitely intricate and are a primary *raison d’être* for the specialized field of Certified Deaf Interpreting.³

A Person with LDS Struggles with the Concept of Time

A striking and possibly pathognomonic feature of people with language deprivation is difficulty with sequencing and chronology, i.e., an inability to conceptualize time. The patient mentioned in the introduction—the young man with unusual behaviors and mysterious test results—provides a good example of this phenomenon. On psychological testing, his ability to assemble the parts of a static picture into a whole was well above average. By contrast, his ability to order a set of pictures into a meaningful narrative fell below the first percentile. Even the simplest children’s story sequences completely eluded him.

The novelist Nancy Huston speculates, “We have no memories of our early childhood because there was not yet an I on which to string fictions” (Huston, 2008). It is possible that the human sense of self arises from the stories—narratives—that we tell ourselves and which are told about us. This observation hints at the vast difficulties with self and agency that those with LDS can experience. A sense of self, after all, is a sense of continuity over time.

Struggles with time, sequencing, and selfhood are not intuitively obvious as consequences of lacking language. They suggest language subtly underlies wide aspects of brain function, including many skills traditionally classified as “nonverbal.”

A Person with LDS Struggles with Cause-and-Effect

“The concept of ‘why’ can only arise from an understanding of time, which is the essential ingredient in narrative. Something happens, then something else happens, then we assign the whole thing a meaning, including our own role in it” (Huston, 2008).

This deficit can have enormous clinical and real-life implications. Difficulty understanding why things happen may lead a person with LDS to experience life as senseless or even traumatic. Patients respond to this powerlessness and confusion in different ways. Some retreat, living quietly within restricted and supportive bounds, e.g., those of a family. Others develop rigid modes of behavior that, although simple and inflexible, at least reliably support a coherent sense of an active self. One long-term patient, for example, rails at the world angrily. She gets her basic needs met by demanding her “rights” as a deaf woman, accusing anyone who crosses her of discrimination. She is unable to turn off her angry approach, however, even when (to others) it appears counterproductive.

To the extent that people with LDS lack an understanding of cause and effect, they are prone to repeating mistakes. To the extent they are unable to discuss cause and effect, they are unable to address their maladaptive patterns.

A Person with LDS Lacks Awareness of a Conversational Partner’s Need for Context, and More Generally Lacks “theory of mind”

When fluent language users converse, each builds an image of his or her interlocutor, imagining what the other person knows and how the speaker’s words are being “heard.” A particularly well-explored area of deficit in those with language deprivation is the inability to construct such an image. The formal name for the skills involved—recognizing that others’ minds contain feelings, ideas, and experiences different from our own—is “theory of mind.” (“ToM”) Patients with the most profound language deprivation appear completely to

lack theory of mind (see Morgan and Kegl, 2006; de Villiers and de Villiers, 2012). Patients with the most profound language deprivation appear completely to lack theory of mind (“ToM”). They exist in a solipsistic space where others are not seen as comparable beings or as social equals.

Three European studies on this subject deserve particular mention. In the first, Swedish investigators compared deaf toddlers using auditory approaches (hearing aids, cochlear implants, and spoken language, but no sign language) to matched hearing toddlers. None of the deaf toddlers in this study passed a basic ToM task that posed no difficulty to the hearing toddlers. That is, children, who from an audiological perspective could hear acceptably well, were in fact failing to acquire an age-appropriate and essential skill. The authors commented, “The possession of a theory of mind (ToM) permits us to reason about the mental states of others... A lack of ToM would be a formidable obstacle to all sophisticated forms of human social interaction” (Meristo et al., 2012).

The second study, from Italy, compared the attainment of theory of mind in children from three different schools: one hearing, one deaf bilingual (Italian Sign Language/Italian), and one serving deaf children using a spoken language approach (including cochlear implants, hearing aids, etc.). The primarily signing bilingual children scored highest (ahead of the hearing norm), while the aided, auditory group scored the lowest (Tomasuolo, Valeri, Di Renzo, Pasqualetti, & Volterra, 2013). To linguists, who recognize the benefits of bilingualism, this result is unremarkable. To many in the fields of deaf education and rehabilitation, to whom pursuing two languages might seem to add complication to the already difficult task of teaching one, it may come as a surprise.

Finally, a careful study from the Netherlands examined theory of mind in 72 children who received cochlear implants before age three. One-third had bilateral implants. All had been provided intensive, high-quality spoken language education. The results were troubling: despite early implantation and outward progress in language acquisition, the implanted children failed to achieve theory of mind equal to that of hearing controls (Ketelaar et al., 2012).

Deficits in theory of mind are often evident in conversational style. It is characteristic of those with LDS to utter a phrase or an ungrammatical, confusing sentence followed by, “you know?”: [I] LIVE in the TALL BUILDING next to the BROWN BUILDING, YOU KNOW? The hope is that the conversational partner will be able to guess the reference, or somehow magically already knows.

Lacking not only the linguistic tools to express meaning clearly but also the abstract comprehension of the limits of others’ knowledge, people with LDS rely on assistance in order to communicate. Such conversation is no longer between equal partners. One must ask clarifying questions, seek

corroboration from others, and guess—yet still often give up in frustration. Like story sequencing, theory of mind is a complex, seemingly non-verbal skill whose full development apparently relies on the acquisition of highly fluent language.

A Person with LDS Struggles with Abstract Concepts

The philosopher Ludwig Wittgenstein developed a fertile theory of language acquisition: he suggested we learn language mainly by *using it* in so-called “language games” that we then “play” in all our social interactions (Wittgenstein, 1953). A language game is a language-based mode of social relating and includes every social linguistic interaction from the rote “How are you?”/“I’m fine” to the specific ways in which a doctor might discuss impending death with a patient. Wittgenstein’s concept of language game is closer to that of game theory than of, say, a board game. His point is that language does not exist merely for communicating information, but for enabling all forms of social interaction.

Consider an 18-month-old who learns the sign for “I love you.” She cannot yet know all the dimensions of the mature ASL or English concepts of love. Yet she can learn to use the sign as a warm expression that will command others’ positive feedback and earn her hugs. Her new sign is like a new toy—she stands in her crib, banging the sides to get someone’s attention, and then gleefully signs “I love you.” Essentially, language creates the possibility of social interactions *that did not previously exist*. Each new sign provides a basis for learning more, as known signs appear in sentences that serve social, emotional, and pragmatic uses. As grammar develops, allowing the meaningful combination of signs, she participates in ever-richer “language games.”

Concepts are learned simultaneously with their linguistic symbols. Basic concepts can seem so easy until one tries to explain one to a person who is completely language-deprived. I once spent hours trying fruitlessly to explain to a language-deprived woman that her “husband” was in fact her uncle.

Consider that people with language deprivation do not excel at such seemingly non-verbal (but clearly conceptual) skills as playing chess or doing math (see Blank, 1965). The missing concepts crucially include concepts about oneself and one’s place in the world.

As each child develops a complete language, worldly, bodily, and experiential knowledge of many types are simultaneously brought to life. An independent “life of the mind” appears as a child names and reflects on internal states. People with language deprivation can lack this life of the mind. They can struggle to name basic feelings, to recognize the social boundaries that are encoded in words such as “girlfriend,” or to reflect on their own experiences. They struggle to see patterns and make generalizations. Lessons learned in one arena are not easily applied to others. The most sophisticated uses of

language—poetic description, wordplay, the deepest expressions of one’s experience of the world—are often inaccessible. “The limits of my language are the limits of my world,” Wittgenstein wrote, an epigram that perfectly captures the challenges of LDS.

The link from learning a word to mastering abstraction may be the essentially metaphorical quality of language—in language, one thing “stands for” another (see Lakoff, 1987). Glickman (personal communication, 2017) tells of working with a language-deprived man on relapse prevention using the conventional ASL sign for “relapse” (literally “slip-and-fall-down”). The patient attended to the ASL phrase “RELAPSE PREVENT” for months before inquiring, “WHO FALL-DOWN?” All of us who have worked in language deprivation can relate to this experience. Similar experiences led Glickman to establish “mindful attention to language and communication” as a guiding principle of his work with language-deprived people (Glickman, 2017).

A Person with LDS Has Difficulty Learning

The mental “desktop” of a person with LDS is typically occupied with a handful of central concerns, leaving little space for new ideas such as feedback from others. Those who know the person well may become familiar with these repeated stories and be able to assist in explaining them (though as with the relapse-prevention story before, some details in an ungrammatical, achronological, and incomplete story may remain mysterious for years).

Since most learning—even learning non-verbal skills such as how to cross a street—occurs via language or linguistically supported experiences, impoverished language contributes directly to difficulty learning. Obviously, this characteristic does not distinguish between intellectual disability and LDS, and reasonably so: LDS is a specific kind of intellectual disability. It does, however, usefully distinguish LDS from such conditions as a depressive or schizophrenic episode in which the patient’s ability to learn may vary as the illness varies, but language itself does not form the obstacle to learning.

It is not unusual in a single hour-long meeting for a person with LDS to soak up a dozen new simple signs for objects and to recall and use them easily at the next meeting. It is far more challenging to convey a single abstract noun such as “parenting” or “side effect.”

A Person with LDS Struggles with Emotional Regulation

A named feeling serves as a kind of mental container, allowing a person to step back from the feeling, observe it, place it into context, and regulate it. Unable to put feelings into words (which usually requires a cause and effect narrative of events that led to the feeling), people with language deprivation can neither

talk themselves through difficulties nor easily avail themselves of emotional support from others. They often appear flooded by feelings, sometimes chronically, a deeply stressful and dysphoric mode of existence.

A Person with LDS Struggles in Relationships

As with healthy emotional regulation, the extent to which language is necessary to healthy human relationships becomes starkly clear when it is absent. In Wittgenstein's model, one might say those with language deprivation have not learned relationship "language games." The games themselves ("going on a date," "getting married") elicit aspects of our personalities, become part of our identities, and provide parameters for socially appropriate behaviors that guide and contain those of us lucky enough to have fluent language.

At the extreme end of "struggling in relationships" lies antisocial behavior. Profound language deprivation along with inadequately structuring early life experiences can result in a victim who makes victims of others, and yet is cognitively incompetent to be held legally or morally accountable. If they result from language deprivation, these behaviors may be thought of as asocial rather than antisocial, but making this distinction may be very difficult in practice. A deaf school principal who offered to rehabilitate a deaf criminal captured the challenge perfectly in 1870:

The question of the moral responsibility of an uneducated person, born deaf and dumb, is one of the subtlest in metaphysics and in every case in which it comes before the courts is a source of great perplexity. The extremely limited communication possible through any interpreter, however skilled in pantomime, and the utter ignorance of the deaf-mute of the language of the country, united with the absence of all knowledge of either human or divine law, invest the subject with peculiar difficulties... – Isaac Lewis Peet, principal of the NY Institution for the Instruction of the Deaf and Blind.

(Peet, 1870a, 1870b)

When people with LDS are not competent to stand trial due to language deficits, but are still dangerous, they create a disposition and treatment problem that often has no good solution (O'Rourke, Glickman, & Austin, 2013; See also Chapter 4 and appendix to this chapter). We are scarcely better positioned to manage such cases nowadays than was Principal Peet nearly 150 years ago.

A Person with LDS Has a Reduced Fund of Information, But May Be "street-wise"

The first half of this descriptor overlaps partly with intellectual disability. The second half, however, is often a striking feature of people with LDS with

otherwise normal intelligence. Using very limited gesture and language, such a person may learn to navigate the world more adaptively than would be possible for a person with intellectual disability alone. Presumably this is accounted for by the preserved aspects of brain function—those that are not entirely dependent on language. Often street smarts correlate with a strong Deaf identity, which presumably supports self-esteem in social interactions. Street smarts, however, rarely keep people entirely safe. If victimized, additional layers of trauma, confusion, and distrust are added to the patient’s psychiatric presentation.

Hall et al. (2017) emphasize the importance of fund of information (FOI) weaknesses in LDS, which also appeared in Glickman’s criteria for “language deprivation with deficiencies in behavioral, social and emotional adjustment” (Glickman, 2009, 2013). These were included too in McCay Vernon’s conception of “primitive personality disorder” as being due to “cognitive deprivation,” i.e., the opportunity to learn facts (Vernon & Rich, 1997). Following Vernon, this author sees deficits in factual knowledge as secondary to deficits in the ability to acquire knowledge, that is, to learn. Those with LDS may lack the abstract structures for imagining that particular knowledge might exist, the skills necessary to access that knowledge, and the introspective abilities required to incorporate new knowledge into more adaptive behaviors. In milder cases of LDS, learning may be more possible, but limited access may restrict FOI. Areas of particular concern include frequent lack of basic knowledge about physical and mental health, sexuality, and healthy relationships. These knowledge deficits profoundly affect quality of life and have obvious clinical implications.

A Person with LDS “acts” Feelings “out”

When humans are unable to communicate needs and feelings, or to look inwards and internally manage them via language, expression of emotion often shifts to behavior. Children with language deprivation can show spectacular levels of such acting-out as they face frustration in identifying and expressing needs, coupled with uncertainty about whether and how their needs can be met.

A four-year-old who was identified as deaf late, and then provided a cochlear implant without remedial support, was adopted and exposed to ASL at age five. His adoptive mother described his behavior when she met him: he hit, bit, and kicked. He “refused to accept authority” and covered her with bruises when she set limits. Lacking language, he was unable to comprehend explanations or predict likely consequences of his behaviors. His tantrums lasted hours and ended only when he was exhausted.

After three years of exposure, he now has enough sign language to communicate everyday needs, but still prefers non-verbal play. “He still doesn’t

understand the concept of *why*,” his mother commented. Yet he is beginning to achieve self-awareness. Imagining a more mature self, and embarrassed by past behaviors, he asked his mother to “throw [my old name] away. I’m [my new name]!”

The Neurobiology of Language Deprivation

The past decade has seen astonishing progress in establishing the functional and anatomical basis for the critical period and therefore for language deprivation. Using functional MRI scanning, Rachel Mayberry and colleagues found that the ability to acquire a first language (“L1”) decreases linearly through childhood. Children with later first exposure show slower language processing and make more grammatical errors. Like second-language (“L2”) learning, late L1 learning takes further towards the back of the brain. This suggests that kinesthetic and visual qualities of words carry excessive importance in early learning relative to their symbolic meanings and grammatical use. Unlike L2 learning, however, late first language never fully migrates forward into the left hemisphere’s dedicated language areas. Wernicke and Broca’s areas, and the arcuate fasciculus connecting them, are where reliable and automatic comprehension and production of language occurs (see also Newman et al., 2015).

You cannot choose *not* to read a word or understand a sentence in a language you know fluently. This is the experience of fast, automatic language processing that people with LDS lack. In Mayberry’s words, language-deprived people suffer from “...underdeveloped neural language processing that has failed to grow forward in the adult brain due to an absence of language experience during critical moments throughout early brain development” (Mayberry, Chen, Witcher, & Klein, 2011).

Complementing Mayberry’s work, Pénicaud and colleagues examined the anatomy of brains exposed to inadequate language. They found reductions in gray matter in the visual association areas of the brain. Native signers had the highest gray matter concentration, hearing people a medium amount, and language deprived people the least. Again, the changes were linear over time. The extent of some of the measured differences was dramatic. Those learning their first language as early teens had 25% to 30% less gray matter in key visual association areas, for example, than native signers. Remarkably, *exposure to language appears to enhance our visual abilities* while exposure to a sign language enhances them further (Pénicaud et al., 2013).

Mayberry’s work used functional MRI scans to observe the brain in action. Pénicaud used voxel-based morphometry (VBM) to quantify brain volumes. A third technique, Event-Related Potentials (ERP), measures brain activity as revealed through electrical signals detected through the scalp. ERPs reveal waves of localized electrical activity as the brain processes language. There are characteristic syntactic responses to grammatical and to ungrammatical constructions. As meaning is decoded, semantic ERP responses appear.

Nils Skotora and colleagues in Germany explored these ERP responses in deaf and hearing adults (Skotora et al., 2012). They found that despite processing grammar slowly (and ineffectively), language deprived adults created meaning with normal speed. This electrophysiological result fits the clinical observation that people with language deprivation too easily jump to conclusions, miss subtleties, and feel an unsupported certainty in their beliefs.

The Role of Cochlear Implantation in Language Deprivation

From the early 1990s, when the first children were implanted, the primary criterion for implant success has been the extent to which implanted individuals hear. Measuring from the bottom of the audiogram upwards, any degree of new hearing certainly represents a kind of success. If a deaf child is seen as a potentially fluent user of sign language instead of being defined primarily as a person who cannot hear, however, a different measure of success appears: the maturation of the child's linguistic ability (in any language). From this perspective, a child who is hard of hearing and can produce some understandable speech, but who lacks true fluency and all its attendant skills, will no longer be considered a true "success." On this subject, a vast outcome literature is clear: "Medical professionals are not able to assure that hearing aids and cochlear implants will result in positive language outcomes" (Hall et al., 2017).

Advocates for implantation do not deny the variability and unpredictability of outcomes. However, they too rarely address the actual lived experience of those with negative outcomes. "Only about a third of the sample scored normally on measures of syntax," reported Tobey, Britt, Geers et al. (2012) on testing one group of eight- to nine-year-old children who were implanted at ages two to five. What is life like for the two-thirds who could not process English syntax? Nowhere in their voluminous publications do these well-known researchers describe what we clinicians who work in Deaf mental health can all too easily guess: just as with the "oral failures" of the previous generation, the children who do not acquire spoken language after cochlear implantation become young people who seek out sign language and the Deaf Community and then struggle through life with LDS.

When based on professional advice not to use sign language in order to "force" reliance on sound, LDS can be considered iatrogenic. Imagine a condition in which children are born unable to walk, but able to learn wheelchair use. Now imagine a new "walking implant" which can permit some of these children to walk. However, because the implant does not work reliably, and the children take naturally to wheelchairs, surgeons and physical therapists advise against them. Half or more of the children are rendered unable either to walk or to use a wheelchair with ease, yet academic publications assess only the extent of walking, never the extent of *mobility*. Patients

unable to walk satisfactorily seek out wheelchairs and the company of other wheelchair users, but never move as fast or go as far as those permitted wheelchairs from birth.

Such a procedure might be considered unethical, yet it parallels the current situation with cochlear implantation. Caregivers' and parents' desires for their children to walk "normally" might overshadow the more important outcome of being able to ambulate in any mode. The stigma that might attach to the children's use of wheelchairs parallels that of sign language use. This "walking implant" thought experiment arguably underestimates the impact of the unsuccessful "talking implant": communication and thought are more central to our humanity than mere physical mobility.

In any cultural setting, some brain features will be emphasized and others discarded, "depending on biological importance of the feature in the given environment" (Kral, Yusuf, & Land, 2017). "Deaf eyes," the ASL phrase for the special visual acuity of natively deaf people, are in fact different (Codina et al, 2011 & Codina et al, 2017) the neural correlates of enhanced peripheral perception are evident at the retinal level. Whether developing deaf eyes is a good or a bad thing is not a scientific or medical judgment, but a cultural one. In essence, cochlear implantation might be considered a culturally sanctioned cosmetic language procedure.

Parents of a child who was turned down for implantation at Boston Children's Hospital due to her likely having no nerve connection to her cochleae, but who then sought it elsewhere, were advised,

We're supposed to teach her to hear, as if praising her for hearing is going to make a difference. They [the surgeon and audiologists] stressed it doesn't matter if she wants to wear it — we *have to* keep it on.

These parents chose to ignore this advice, realizing that regardless of how hard they praised her, their daughter's implant provided minimal sound awareness and no access to language, while she communicated naturally and comfortably in ASL.

The hearing research community has recently begun seeking answers to the "enormous variability" (Pisoni, Kronenberger, Roman, & Geers, 2011) long observed in outcome studies of cochlear implantation. "Maladaptive cross-modal plasticity" (MCMP) is the hypothesis that brain areas that can serve specific functions when stimulated by an associated sensory input might be "colonized" by other uses, making them less able to perform their original task (Corina et al., 2017). Thus, visual processing (i.e., sign language) might colonize "auditory" association areas, rendering them inhospitable to auditory stimulation from a cochlear implant. This becomes a justification for restricting access to sign language following implantation.

Yet it is rare that CI recipients achieve 100% word discrimination on hearing alone. Most use their eyes for lip-reading and other contextual visual cues.

Furthermore, nearly all human communication is multimodal. Even as they learn to speak, hearing babies point and gesture. All speakers gesture, interpret body language, process facial cues, and lip-read unconsciously. Reading is cross-modal. It is therefore unclear whether “colonization” of auditory areas with visual skills would be adaptive or maladaptive.

In any case, the MCMP hypothesis is based on a classic sensory-based model of brain organization which is challenged by the newer “Task-Selective Sensory-Independent” (TSSI) model. In TSSI brain modules specialized to various tasks can easily switch to receive input from different sensory channels (Amedi, Hofstetter, Maidenbaum, & Heimler, 2017). In the newer model, (supported by Mitchell, 2017) visual stimulation to “auditory” areas, instead of being problematic, would simply indicate visual input to specific linguistic tasks, independent of modality (spoken or signed). For example, blind people’s brains make use of the appropriate task-specific “visual” areas for determining the shape of an object or layout of a room—yet using tactile and auditory rather than visual input.

At the time of this writing, it is not known if very early cochlear implantation prevents the typical cross-modal assignment of auditory areas to visual processing, or the intra-modal organization of vision towards language processing (Glick et al., 2017). To the extent that the imperfect sound delivered by current CIs is inadequate, visual “takeover” might well take place regardless and might be adaptive. Perhaps functional scans will make it possible to triage and track CI patients’ brain responses to implantation. Regardless, this author would prefer a focus on “lighting up” the language areas of the brain because so much depends on them. Implant surgeons might better recognize the social, cultural, and linguistic dimensions of the cochlear implant and substitute the goals of overall language, cognitive, and social development for the narrower goals of sound recognition, environmental awareness, and speech.

Consider the case of a young man who asked to share his story here. His parents crossed the world seeking the highest quality cochlear implantation, speech therapy, and oral-based schooling that they could find. By audiological standards alone, he is a cochlear implant success—he “hears” and “speaks,” though his clearest communication is in writing. He has LDS, however, to the extent that he cannot manage public schooling. Despite his parents’ and providers’ commitment to oral approaches, he has sought out sign language himself. Asked why, he wrote, “So I can speke with deaf person who dose not have cochlear implaint” [sic]. This small language sample demonstrates the problem of, so to speak, neither walking nor having a wheelchair. The young man’s English is inadequate to normal academic or social communication, which leads to rejection from the hearing community, where very high standards for linguistic skill are expected of those who belong.

It was noted earlier that even CI users with apparently strong language skills can show deficits in theory of mind. This may relate to the extraordinary

intricacy of normal language processing. Using ERP, a group of Swedish researchers noted a tendency toward “top-down semantic prediction”—in other words, guessing at answers—among implanted children (Kallioinen et al., 2012). Any hard of hearing person is familiar with this difficulty—lacking full information, one guesses and hopes for the best. Guessing makes a precarious foundation on which to build one’s life.

Most who seek to “cure” deafness do so not with the evil goal of destroying Deaf culture or depriving deaf people of language, but rather from a belief in the importance of language identical to that of the Deaf community. There is, however, a marked asymmetry of knowledge and power: few oral, auditory-verbal educators or otologists use sign language or count deaf people as friends, whereas most deaf people are acutely aware of the perils of inadequate language. Implant advocates’ understanding of the risks of mild language deprivation might well change if they could appreciate both the reality of LDS and Deaf normality firsthand.

None of the aforementioned is intended to deny the potential efficacy of implantation in many cases or the great care that some surgical teams take in selecting and following cases. The concern here is entirely with those for whom implantation and oral/aural approaches unintentionally deny children fluent language.

~~Making Psychiatric Diagnoses in People with LDS~~

Accurate psychiatric diagnosis of deaf patients with language difficulties is this author’s most challenging and rewarding work. The challenge can be thought of in terms of “seeing” psychiatric illness through the confounding filters of non-fluent language, “communication trauma,” cultural mismatch, reduced fund of information, heightened suspicion of caregivers, and/or idiosyncratic beliefs and fears. Some lessons learned over the years follow:

- 1 Assessment will take more time, often *much* more time. Repeated meetings over weeks or months, or an extended stay in a respite program or inpatient unit, may be necessary to establish a diagnosis that in a hearing person might have been clear within the first hour.
- 2 Assessment will require more work. Patients are often unable to provide a useable history. Those seeking to assist the patient often have a partial understanding of the patient’s experience. The teams in which the author works gather as many sources of current and past information as possible, seeking redundancy in reported symptoms and history, and often engaging in some detective work. We have confirmed cases of language deprivation by contacting relatives in another country or by ascertaining the oral philosophy of a faraway school.

- 3 The involvement of a Certified Deaf Interpreter and/or a formal communication assessment is frequently essential. When using a Certified Deaf Interpreter, it is important to be mindful that unless one specifically requests phatic attention to language per se, the interpreter may inadvertently conceal language problems in the effort to circumvent them. Skilled CDIs are often highly creative in optimizing visual communication. A time frame, for example, might be established by reference to holidays rather than traditional dates. An empathic repetition of an overwhelmed client's tentative signs might build trust and free expression. The confidence and creativity of the CDI, who is "deaf like me," can reduce the patient's shame or fear of unsuccessful communication. The CDI's presence as a member of the team can model interaction with the perhaps untrusted authority of the clinician. CDI assistance is especially helpful when the patient may know some foreign sign language, when seeking to distinguish psychotic conversation from language deprivation, when physical issues such as cerebral palsy impede clear signing, for deaf-blind clients, and when there is comorbidity with other diagnoses that affect language, particularly the more severe forms of intellectual disability.
- 4 Clinicians unfamiliar with deafness should feel free to seek consultation from those who specialize. Specialty team evaluation is often needed in cases of medical comorbidity. Cytomegalovirus (CMV) and congenital rubella infection are leading causes of the combination of intellectual disability and aggressive behavior in deaf patients. Many other forms of pre-, peri-, and post-natal trauma, such as Extracorporeal Membrane Oxygenation (ECMO), can lead to behavioral disturbances later. Frequently, brain damage exacerbates language deprivation and vice versa. A long and growing list of congenital syndromes that include deafness must be ruled out. Families frequently attribute deafness to a fall or other potentially avoidable event and be surprised when genetic testing later shows that the child was in fact likely born deaf.

Two-thirds of the outpatients referred to Cambridge Hospital's Deaf Service show some degree of LDS, a proportion similar to that among inpatients at the Westborough State Hospital's Deaf Unit (Black & Glickman, 2009). LDS eventually appears to be the only diagnosis for fully one-quarter of Deaf Service patients. For patients with both LDS and psychiatric diagnoses, the latter follow the typical profile for a hearing outpatient clinic with two significant exceptions: first, PTSD appears to be far more prevalent, presumably due to a deaf child's vulnerability to abuse and neglect. All too often, deaf patients show severe, chronic, developmental trauma. Second, due to syndromal causes of deafness (e.g., cytomegaloviral infection, an acquired syndrome,

or Waardenburg syndrome, a congenital one) intellectual disability and organic brain damage are particularly common.

Treatment

Ro's remarkable late acquisition of ASL did not occur until he was placed in an immersive sign language environment. Such placement is the essential and central remediative treatment strategy for significant LDS. Language exists most richly within a community of language users; contact with that community most effectively transmits it. Even if grammatical skills do not improve, such placement usually strengthens the individual's cultural identity as a Deaf person, a feeling of belonging that seems to be an essential component to most people's happiness. More commonly, there is a flowering of confidence and pride along with improvements in behavior, real world knowledge, emotional regulation, and social skills. As one adult put it,

All this time my family saw me as broken, as the problem one they had to do everything for. I was sad. I drank. I did not care about myself. But now I understand — I am not broken. I am *Deaf!*

This patient—who had rarely been let out of her parents' sight—subsequently recovered from depression, began dating a deaf adult in another city, became an avid runner, and found meaningful volunteer work despite significant LDS.

Adults with language deprivation have typically endured a lifetime of frustration with communication. They can be flooded with feelings of rage, sadness, and shame. Their unheard and misunderstood stories deserve an attentive audience. Elucidation often requires techniques beyond words: acting scenes out, drawing, or searching for locations, references, or people on the internet. Very frequently, key stories—such as memories of abusive or neglectful experience—are recalled and assembled in small pieces over long periods of time. The reward for this work is frequently a new formulation useful to all who work with the client.

LDS in children is clinically a “language emergency.” Very young children even slightly behind in their language milestones deserve intensive intervention. Delays of only a few months may make the difference in whether a child will eventually acquire fluent language. The greatest and most poignant challenge is for the grieving hearing parents of a young child, who may feel that acknowledging a language problem equates to “giving up” on the dream of a child who “hears and speaks normally,” to now enter the confusing and politically fraught world of special education. Wrapping one's mind around the concept of a child's risk of lacking language is very difficult even for many well-educated and sophisticated parents. Once an understanding of the child's needs is achieved, accessing the necessary special education services can be

an extended process, sometimes filled with dramatic hearings and opposing evaluation reports. Finally, appropriate school placements simply may not be available locally.

Medications can be useful for some LDS symptoms, but *medication alone is never the answer*. Beta-blockers can ease panic and rage. Antidepressants can treat secondary depression. Mood stabilizers are often helpful for aggression. Antipsychotics are sometimes essential for severe behaviors, but given the difficulty that many patients with LDS have in making medical decisions for themselves, a decision to use antipsychotics should be made with the greatest of care and only after obtaining appropriate guardianship. Far too many patients with LDS are treated symptomatically with medications alone to “make the problem go away,” rather than being provided the language, educational, vocational, or therapeutic support with which they really need.

Family therapy and education are often crucial, not only with children but with adults. Family members often have a limited understanding of LDS and may believe that observed behaviors result either from deafness alone, mental illness, or from stubbornness or laziness. A full explanation can revise a family’s dynamics, increasing compassion and tolerance of the problematic behaviors, and motivating family support for the needed language access and opportunities for independence not available at home.

Specific psychotherapy treatment strategies are described in the Chapters 2 and 3, in this volume, and in Glickman (2009, 2017). Strategies for promoting language and communication abilities are described in Chapter 7. Psychotherapy, “the talking cure,” must of course be drastically reconceptualized for such patients. Glickman (2017) developed a model of “pre-therapy” for such persons which emphasizes foundational language, cognitive and psychosocial skills, and the creation of a shared schema or map for “what we do here in the treatment setting,” along with strategies intended to make a therapeutic interaction understandable and meaningful. All interventions need to be undertaken with respect for the dignity and autonomy of the individual (see Miller, 2016).

Conclusion

Language deprivation persists in large part because it crosses the boundaries of multiple professional disciplines, none of which is solely responsible for a child’s language outcome. Furthermore, LDS straddles the cultural barrier between deaf and hearing worlds, the barrier which creates such misunderstandings as the “assault” of the “rude” customer in 1854. This is a delicate subject that must be addressed: hearing medical “experts” in deafness rarely understand deafness as a lived experience (see Kushalnagar et al., 2010).

The author is aware of no ENT physician in the entire United States, for example, who is a fluent user of American Sign Language. The experiences,

expertise, and perspectives of actual deaf people are not easily incorporated into the hearing world systems of medicine and education. Parents naturally want their children to share their language, to be physically “normal,” and participate in their own cultural “language games.” The concept of language as an entity abstracted from its mode (signed or spoken), and seen as the lynchpin of cognitive and emotional development, is not a simple one.

At the time of this writing, research and advocacy regarding LDS are at an all-time high. A fruitful approach has been to consider fluent language a basic human right (see for example the Nyle DiMarco Foundation and LEAD-K). From this perspective, parents and professionals working with deaf children share an obligation to ensure that language deprivation does not occur. Multiple states have already approved such language-rights legislation. Best strategies for legal advocacy are discussed in Chapter 10.

An obstacle to providing care is the lack of formal diagnostic criteria or reimbursement codes for language deprivation syndrome. Under the DSM-5’s classification scheme, LDS would be a “neurodevelopmental disorder.” The ICD-10-CM offers code F80.4, “Speech and language development delay due to hearing loss.” This reflects the typical view that language is an isolated aspect of brain development rather than foundational one, and the word “delay” is inaccurate. There are two published proposals for formal criteria, by Vernon & Raifman (1997) and Glickman (2009). Hall et al. (2017) provide an overview of past-published research on this condition. Cambridge Hospital criteria are in active development (see Esposito, Gulati, & Prestia, 2012; Gulati, 2014a, 2014b).

Currently a clinical diagnosis, LDS will eventually become a neurological diagnosis, as ever-improving techniques for observing the structure and function of the brain illuminate the mechanisms underlying each symptom. In the meantime, the crucial need is for recognition of the syndrome as an ever-present risk for every deaf child. In developing countries, where high rates of infectious disease and culturally-sanctioned consanguinity quadruple the population rate of deafness, the risk comes mainly from lack of access to appropriate services. In developed countries, the risk most often comes from an overzealous focus on spoken language, from the excessive burden placed on parents to seek out information and resources for their children, and from the tendency to see “language delay,” where one might better see “language emergency” and therefore developmental or human emergency.

Language sits at the very core of our humanity. Deafness can create an obstacle to its acquisition but need not create an insuperable one. Awareness and the willingness to take action when needed—even against the local preferred communication mode, the advice of an “expert” in deafness, or parents’ fondest wishes for their child—can entirely prevent it. All children deserve to be fluent language users who can lead autonomous and fulfilled lives.

Appendix: Language Deprivation Syndrome, Antisocial Personality, and Criminal Behaviors

Neil S. Glickman

Some adults with LDS display antisocial and even criminal behaviors. They form a small but significant subset of the larger LDS group. These people may present a challenging differential diagnosis between LDS and the spectrum of diagnoses ranging from conduct disorders to antisocial personality disorder to sociopathy. Programs attempting to serve, or manage, these individuals struggle with whether they are seeing primarily a clinical or a criminal matter and with how to combine treatment with limit setting and accountability.

As noted in this chapter, asocial and aggressive behavior is common in LDS and is a typical reason for referral to clinical programs. With children, lack of verbal reasoning, self-regulation, and interpersonal skills can be expected to result in oppositional-defiant behavior and/or conduct disorders. Lack of these self-management skills may inadvertently be reinforced by family or school environments which are either too rigidly based on strict adherence to rules, too lacking in any structure at all, or, as clinicians commonly observe, a random mix of overly restrictive and overly lax parenting and supervision.

By the time these persons reach adulthood, conduct problems and disorders may develop into antisocial personality with a “pervasive pattern of disregard for and violation of the rights of others” (DSM-5). Some of our Westborough State Hospital Deaf Unit patients had multiple involvements with police—or would have, had the police and courts held them legally accountable for their behaviors—but the most common profile was of the person who, as everyone said, “blows up” frequently, evidencing a lack of coping, self-regulation, or distress tolerance skills. These blowups often resulted in a diagnosis of “intermittent explosive disorder,” yet intermittent explosive disorder doesn’t really describe the clinical picture. If their language and communication deficits contributed to weaknesses in attachment with parental figures, this is likely the first template for a pattern of disturbed relationships. Additionally, there is the issue of pervasive developmental trauma, because language-deprived children are vulnerable to multiple kinds of abuse and neglect, and they have the burden of lack of language structures and communication partners with whom to process these experiences. These different kinds of aversive experiences create a complex portrait diagnostically of people who come to function poorly and behave badly.

Thus, there are multiple pathways through which children with language deprivation can grow into adults with serious asocial or antisocial behaviors, including violent aggression towards others. If there is a distinction in how we think about LDS vs antisocial personality, it is that the violence often seen in clinical samples of persons with LDS appears random, not instrumental. That is, the person “acts out” because they lack language, cognitive, and psychosocial skills to manage their feelings. They also lack the “skills” of theory

of mind and empathy, meaning they do not appreciate how their behaviors impact other people. They do not usually seek to harm others, but with such a limited set of skills for intrapsychic and interpersonal challenges, they often find themselves doing so, and then find themselves in conflict with others and with the law.

Consider the deaf adult with LDS who has never had any health or sexuality education he could understand and who lacks the ability to communicate easily with potential friends, not to mention the complex ability of negotiating a sexual encounter, who comes to repeatedly force himself sexually on people, in the process committing an array of sexual assaults. He may come to understand that he is in trouble but may not understand why. He lacks vocabulary and understanding for concepts like “crime,” “assault,” and “informed consent.” He has no understanding of age of consent laws or appreciation that even adults may not be able to give informed consent. Indeed, his knowledge and skill deficits go much deeper. He probably has little understanding of what he feels and no thought through strategies for how to manage his feelings and impulses. Convicted of crimes like indecent assault, he is then required to register as a sexual offender, a concept he also doesn’t understand, and to attend a sexual offender treatment program. Even if a program is found that would accept him, usually based on the naïve idea that all they need to do is provide sign language interpreters, it is highly likely he wouldn’t understand the treatment. Indeed, it’s also highly likely he would not understand even more basic issues such as “what I did wrong,” “who are you,” “why I am here in this place,” “what is supposed to happen here,” and how I “get better,” whatever that means. When you have someone like this, who may well be sexually dangerous, are labels like “sexual predator” or “sexual offender” warranted?

With conduct and antisocial personality disorder, by contrast, and certainly where there is sociopathy, there is more evidence of organized intention to commit antisocial acts and a reliable pattern of mistreatment of other people for self-serving ends. Purposeful, instrumental violence is not part of our understanding of LDS, but the lines can be blurry in practice. The distinction is very important diagnostically and prognostically and in determining treatment or disposition.

As noted earlier, LDS was previously conceptualized as “primitive personality disorder” (Vernon, Steinberg, & Montoya, 1999) and was considered a matter of extreme under-socialization. The term “primitive personality disorder” is unfairly stigmatizing and masked the fact that this condition is caused almost entirely by preventable social experiences. These are the reasons why I proposed some years ago the alternative diagnosis of “language deprivation with deficiencies in behavioral, emotional and social adjustment” (Glickman, 2009, pp. 331–337.) The new diagnosis of language deprivation syndrome is a more eloquent conceptualization of this condition.

It is not surprising that, where deaf prisoners have been studied, high levels of language deprivation and very poor communication abilities have been

found. Research of deaf prisoners in the Texas correctional system, for instance, found that about half of the deaf prisoners demonstrated linguistic incompetence to stand trial (Miller, 2004). Similar findings of high prevalence of language deprivation and a resultant “unfitness to plead” (the UK equivalent of incompetence to stand trial) have been found in Great Britain, which has forensic hospital programs for deaf persons (Young, Howarth, Ridgeway, & Monteiro, 2001). Although Deaf prisoners are usually not grouped together as in these programs, these samples likely represent the population of deaf prisoners fairly. Indeed, a reasonable conclusion is that more deaf people with LDS end up in prison than in psychiatric settings, even though in neither setting is the LDS likely to be recognized.

The differential diagnosis between LDS and antisocial personality or criminality matters because, in practice, people with both conditions will find their way into both treatment and forensic settings. Some of these people who commit crimes simply need appropriate treatment opportunities to develop language, communication, and other skills. They can be helped. On the other hand, some of these people who are in treatment settings really need the firm limits and control that legal and forensic authorities provide. It is no one’s intention that the diagnosis of LDS become “a backdoor means for characterizing patterns of criminal behaviors as a new form of psychopathology” (Glickman, 2009), nor to suggest that these individuals be excused from the same expectations for safe social behavior as everyone else. It is our intention, however, to bring a clinical perspective to work with them and to promote the development of desperately needed educational and treatment resources.

Most often, in our experience, individuals with LDS, who have a history of problem behaviors that bring them into conflict with the law, lack the criminal intent that is more characteristic of genuine antisocial personality. On the other hand, it is possible that one can have both LDS and meet criteria for diagnosis on the antisocial spectrum. Given the sympathy that hearing people commonly feel for deaf persons and the terrible plight generally of individuals with LDS, it is quite natural for well-meaning people to seek out treatment resources for them, regardless of the severity of their behavioral challenges, and to assume that these are people who need help, not punishment. This well-intentioned view is sometimes naïve, because people with LDS can be both victims and victimizers. Indeed, Vernon and Vernon (2010) provide a fascinating account of a deaf serial killer who took malicious advantage of the well-intentioned sympathy that many hearing people feel for deaf people (Vernon & Vernon, 2010).

In our experience, successful treatment and management of such individuals *requires* an effective collaboration between specialized Deaf mental health treatment and police, courts, and/or probation. Meaningful interventions would have to include language/communication development, to the extent possible, education and psychosocial skill building, incentives for treatment

compliance, and supervision. Someone like a probation officer, who takes their responsibilities of enforcing expectations for safety and participation in treatment seriously, can be enormously helpful. This is especially true in community settings where requirements for supervision and rules like limits on internet access conflict with human rights and may be impossible for mental health providers to enforce.

When the legal system, perhaps because of the difficulties of accommodating the communication needs of the person with LDS, defers entirely to treatment programs, the result can be catastrophic not only the individual but for the treatment program, which needs firm backing from the legal system in order to maintain safety and motivate participation in treatment. Ironically, because legal consequences like jail are more concrete than therapeutic concepts like “relapse prevention,” the person might not see a reason to engage in a vague, abstract, and unfamiliar process like therapy unless it is court ordered and there is someone in the “bad cop” role, like a probation officer, enforcing it. Struggles between the mental health and legal establishment over who is responsible and an inflexible either-or mentality that simplifies and distorts a highly complex situation are counterproductive.

Some people with LDS are incarcerated because their rights to due process were violated. Others may avoid legal consequences either because police and courts don’t want to deal with them, at least until they engage in very serious crimes, or because they were accurately determined to be legally incompetent (O’Rourke et al., 2013). They may find themselves in a legal and psychiatric limbo where they can’t be incarcerated because they are not competent, can’t be released because they are dangerous, and can’t be treated because their incompetence for linguistic reasons is not something that can be fixed at this stage in their lives. (Remediation for incompetence due to linguistic reasons may sometimes be possible, depending on the severity of language deprivation and the quality of specialized competency training they receive. See Chapter 4 by Pollard and Fox a fuller discussion.)

Without appreciating the need for a complex, systemic response involving Deaf mental health and legal systems, programs that take on the difficult work of serving individuals with LDS may find themselves without legal recourse when attempting to serve some highly dangerous people who happen to be deaf and language deprived. If you have done this work, you know this is not an idle or academic concern.

Notes

- 1 Note: the word “dysfluent” is usually used in medicine and speech pathology to refer to difficulties with articulation, e.g., stuttering. In Deaf mental health, however, its meaning has come to include the brain-based linguistic difficulties caused by early deprivation.
- 2 “Deaf Service: a Peek in the Mirror,” 2012 was supported by NIH Research Grant # P60 MDO 02261 funded by the National Institute on Minority Health and Health Disparities, a project of the Center for Multicultural Mental Health Research, Cambridge Health Alliance.

- 3 Williams and Crump, in this volume, describe a communication assessment tool with which qualified examiners can assess fluency in ASL. Tools appropriate for research are described in the chapter by Henner and colleagues. Clinical best practice when there is a question of fluency is formal communication assessment by a qualified and experienced examiner.

References

- Altshuler, K. (1962). Psychiatric considerations in the deaf adult. *American Annals of the Deaf*, 107, 560–561.
- Amedi, A., Hofstetter, S., Maidenbaum, S., & Heimler, B. (2017). Task selectivity as a comprehensive principle for brain organization. *Trends in Cognitive Sciences*, 21(5), 307–310.
- Black, P., & Glickman, N. (2009). Language and learning challenges in the Deaf psychiatric population. In Neil S. Glickman (Ed.), *Cognitive behavioral therapy for deaf and hearing persons with language and learning challenges*. New York: Routledge.
- Blank, M. (1965). Use of the deaf in language studies: A reply to Furth. *Psychological Bulletin*, 63(6), 442–444. doi:10.1037/h0022016
- Codina, C., Buckley, D., Port, M., & Pascalis, O. (2010). Deaf and hearing children: A comparison of peripheral vision development. *Developmental Science*, 14(4), 725–737. doi:10.1111/j.1467-7687.2010.01017.x
- Corina, D. P., Blau, S., LaMarr, T., Lawyer, L. A. (2017). Coffey-Corina Sharon auditory and visual electrophysiology of deaf children with cochlear implants: implications for cross-modal plasticity. *Frontiers in Psychology*, 8, 59. doi:10.3389/fpsyg.2017.00059
- Codina, C. J., Pascalis, O., Baseler, H. A., Levine, A. T., & Buckley, D. (2017). Peripheral visual reaction time is faster in deaf adults and British sign language interpreters than in hearing adults. *Frontiers in Psychology*, 8, 50. doi:10.3389/fpsyg.2017.00050
- Codina, C., Pascalis, O., Mody, C., Toomey, P., Rose, J., Gummer, L., & Buckley, D. (2011). Peripheral visual reaction time is faster in deaf adults and British sign language interpreters than in hearing adults. *PLoS One*, 6(6), e20417.
- de Villiers, P. A., & de Villiers, J. G. (2011). Deception dissociates from false belief reasoning in deaf children: Implications for the implicit versus explicit theory of mind distinction. *British Journal of Developmental Psychology*, 30(1), 188–209. doi:10.1111/j.2044-835x.2011.02072.x
- Esposito, G., & Prestia, 2012, “The Deaf and Hard of Hearing Service: A Peek in the Mirror.” Grand Rounds presentation, Harvard Medical School, March 19, 2012
- Glick, H., & Sharma, A., (2017). Cross-modal plasticity in developmental and age-related hearing loss: Clinical implications. *Hearing Research*, 343, 191–201.
- Glickman, N. (2009). *Cognitive behavioral therapy for deaf and hearing persons with language and learning challenges*. New York, NY: Routledge.
- Glickman, N., ed. (2013). *Deaf mental health care*. New York, NY: Routledge.
- Glickman, N. (2017). *Preparing deaf and hearing persons with language and learning challenges for CBT: A pre-therapy workbook*. New York, NY: Routledge.
- Gregory, S., Bishop, J., & Sheldon, L. (1995). *Deaf young people and their families*. Cambridge, UK: Cambridge University Press.
- Gulati, S. (2014a) Language deprivation syndrome. ASL Lecture Series. www.youtube.com/watch?v=8yy_K6VtHjw, Brown University.
- Gulati, S. (2014b) Language deprivation Syndrome. In *September, 2014 Annual Symposium*, Massachusetts Department of Mental Health/Worcester Recovery Center and Hospital, Worcester, MA.
- 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*, 56(6), 761–776. doi: 10.1007/s00127-017-1351-7
- Huston, N. (2008). *The tale tellers: A short study of humanity*. New York, NY: MacArthur & Co.

- Hutchinson, E. D. (2011). A life course perspective. In E. D. Hutchinson (Ed.), *Dimensions of human behavior: The changing life course* (pp. 1–38). Thousand Oaks, CA: Sage Publications.
- Kallioinen, P., Olofsson, J., Mentzer, C. N., Lindgren, M., Ors, M., Sahlén, B. S., ... Uhlén, I. (2016). Semantic processing in deaf and hard-of-hearing children: Large N400 mismatch effects in brain responses, despite poor semantic ability. *Frontiers in Psychology, 7*. doi:10.3389/fpsyg.2016.01146
- Ketelaar, L., Rieffe, C., Wiefferink, C., Frijns, J. H. N. (2012). Does hearing lead to understanding? Theory of mind in toddlers and preschoolers with cochlear implants. *Journal of Pediatric Psychology, 37*(9), 1041–1050.
- Kohl, H. (1966). *Language and education of the deaf*. New York, NY: Center for Urban Education.
- Kral, A., Yusuf, P. A., & Land, R. (2017). Higher-order auditory areas in congenital deafness: Top-down interactions and corticocortical decoupling. *Hearing Research, 343*, 50–63. doi:10.1016/j.heares.2016.08.017
- Kushalnagar, P., Mathur, G., Moreland, C., Napoli, D. J., Osterling, W., Padden, C., & Rathmann, C. (2010). Infants and children with hearing loss need early language access. *The Journal of Clinical Ethics, 21*(2), 143–54.
- Lakoff, G. (1987). *Women, fire, and dangerous things: What categories reveal about the mind*. Chicago, IL: University of Chicago Press.
- Levine, E. (1956). *Youth in a soundless world*. New York, NY: New York University Press.
- Mayberry, R., Chen, J. -K., Witcher, P., & Klein, D. (2011). Age of acquisition effects on the functional organization of language in the adult brain. *Brain & Language, 119*, 21–69.
- Meristo, M., Morgan, G., Geraci, A., Iozzi, L., Hjelmquist, E., Surian, L., & Siegal, M. (2012). Belief attribution in deaf and hearing infants. *Developmental Science, 15*(5), 633–640. doi:10.1111/j.1467-7687.2012.01155.x
- Miller, J. (2016). *Wilfred and me*. Kingston, ON: Woodpecker Lane Press.
- Miller, K. R. (2004). Linguistic diversity in a deaf prison population: Implications for due process. *Journal of Deaf Studies and Deaf Education, 9*(1), 112–119. doi:10.1093/deafed/enh007
- Mitchell, R. E. (2004). When parents are deaf versus hard of hearing: Patterns of sign use and school placement of deaf and hard-of-hearing children. *Journal of Deaf Studies and Deaf Education, 9*(2), 133–152. doi:10.1093/deafed/enh017
- Mitchell, T. V. (2017). Category selectivity of the N170 and the role of expertise in deaf signers. *Hearing Research, 343*, 150–161. doi:10.1016
- Morgan, G., & Kegl, J. (2006). Nicaraguan sign language and theory of mind: The issue of critical periods and abilities. *Journal of Child Psychology and Psychiatry, 47*(8), 811–819. doi:10.1111/j.1469-7610.2006.01621.x
- Myklebust, H. R. (1960). *The psychology of deafness: Sensory deprivation, learning, and adjustment*. Oxford, UK: Grune & Stratton.
- Newman A. J., Supalla T., Fernandez N., Newport E. L., & Bavelier D. (2015) Neural systems supporting linguistic structure, linguistic experience, and symbolic communication in sign language and gesture. *Proceedings of the National Academy of Science, 112*(37), 11684–11689. doi:10.1073/pnas.1510527112
- New York (Daily) Times. September 29, 1852. “Deaf mutes: The status of the census.”
- O’Rourke, S., Glickman, N., & Austin, S. (2013). Deaf people in the criminal justice system. In N. Glickman (Ed.), *Deaf mental health care*. New York, NY: Routledge.
- Peet, I. L. (1870a). Principal of the NY Institution for the Instruction of the Deaf and Blind (NYT 10/17/1870).
- Peet, I. L. (1870b). The Deaf-Mute Murderer Bodine: A letter from Isaac L. Peet (NYT Monday 10/17/1870), 2.
- Pénicaud, S., Klein, D., Zatorre, R. J., Chen, J., Witcher, P., Hyde, K., & Mayberry, R. I. (2013). Structural brain changes linked to delayed first language acquisition in congenitally deaf individuals. *NeuroImage, 66*, 42–49. doi:10.1016/j.neuroimage.2012.09.076

- Pinker, S. (1994). *The language instinct*. New York, NY: Harper Perennial Modern Classics.
- Pisoni, D., Kronenberger, W., Roman, A., & Geers, A. (2011). Article 7: Measures of digit span and verbal rehearsal speed in deaf children following more than 10 years of cochlear implantation. *Ear and Hearing*, 32(1), 60s–74s.
- Rainer, J. D., & Altshuler, K., (Eds.). (1968). *Psychiatry and the deaf*. Washington, DC: U.S. Department of Health, Education, and Welfare.
- Schaller, S. (2012). *A man without words*. 2nd ed. Berkeley: University of California Press.
- Skotara, N., Salden, U, Kügow, M. Hänel-Faulhaber, B. & Röder, B. (2012). *BMC Neuroscience*, 13, 44. www.biomedcentral.com/1471-2202/13/4
- Tobey, E. A., Britt, L., Geers, A., Loizou, P., Loy, B., Roland, P., ... Wright, C. G. (2012). Cochlear implantation updates: The Dallas Cochlear implant program. *Journal of the American Academy of Audiology*, 23(6), 438–445. doi:10.3766/jaaa.23.6.6
- Tomasuolo, E., Valeri, F., Di Renzo, A., Pasqualetti, P., & Volterra, V. (2013). Deaf children attending different school environments: Sign language abilities and theory of mind. *Journal of Deaf Studies and Deaf Education*, 18(1), 12–29.
- Wittgenstein, L. (1953). *Philosophical investigations*. Oxford, UK: Blackwell.
- Vernon, M., & Raifman, L. J. (1997). Recognizing and handling problems of incompetent deaf defendants charges with serious offenses. *International Journal of Law and Psychiatry*, 20(3). 373–387.
- Vernon, M., & Rich, S. (1997). Pedophilia and deafness. *American Annals of the Deaf*, 142(4), 300–311. doi:10.1353/aad.2012.0258
- Vernon, M., Steinberg, A. G., & Montoya, L. A. (1999). Deaf murderers: Clinical and forensic issues. *Behavioral Sciences & the Law*, 17(4), 495–516. doi:10.1002/(sici)1099-0798(199910/12)17:4<495::aid-bsl361>3.0.co;2-6
- Vernon, M., & Vernon, M. (2010). *Deadly charm: The story of a deaf serial killer*. Washington, DC: Gallaudet University Press.
- Young, A., Howarth, P., Ridgeway, S., & Monteiro, B. (2001). Forensic referrals to the three specialist psychiatric units for deaf people in the UK. *Journal of Forensic Psychiatry*, 12(1), 19–35. doi:10.1080/09585180010027842