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Diary Reporting and Phonetic Transcription for Effective Speech Analysis in Children with Disabilities: What Itard did not Know

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Abstract

Speech language pathology deals with the evaluation and treatment of communicative disorders and swallowing disorders. Multiple reasons cause delayed or impaired speech leading to diagnosis or misdiagnosis as a speech disorder. Victor of Aveyron, a French feral child is one such case. He was described as an "incurable idiot and a hopeless case" by Pinel. Jean Marc Gaspard Itard, a young medical student, effectively adopted Victor into his home and published reports on his progress. He used a diary to record his progress in teaching him to speak and communicate human emotion. Victor showed significant early progress in understanding language and reading simple words, but failed to progress beyond a rudimentary level. It would have been beneficial if newer intervention methods such as phonetic transcription or phonetic alphabet were available during Itard's treatment of Victor. Itard's methods of treatment set the stage for more advanced techniques in the accuracy of speech analysis and expanded theories in the areas of special education for children with language-learning disabilities.
Keywords: speech language pathology, feral child, Itard catheter, diary reporting method, phonetic transcription, phonetic alphabet

Introduction

Communication disorders are among the most common disabilities that affect children in the United States (Asha, 2008). Of the communication disorders, speech and speech-language impairment are the most frequently identified. The Disability Status Report for the United States (Employment and Disability Institute of Cornell University, 2011), subsumes speech and language disabilities under the general category of cognitive disorders, and reports that of the 2.3 million children with a disability, ages 5 to 15, 3.9% exhibited a "Cognitive Disability." The National Center for Education Statistics reports prevalence by grade levels K, 3 and 5, with prevalence ranging between 1-2% for grade levels K, 3, and 5 (Herring, McGrath & Buckley, 2007). In contrast, prevalence for disabilities among African American and Hispanic children is generally reported higher than for Caucasian students, prompting some professionals to question the accuracy of the calculations. Moreover, some assert that reports of higher disability prevalence among language minority and various racial-ethnic groups may be a result of inappropriate diagnosis (speech-language disorders overlooked or identified when actually not present), which may blur the issue as well. As of 2014, the NCES reports that enrollment in special education services for children served under IDEA (Individuals with Disabilities Education Act), has decreased with some changes in prevalence. Current demographic reports indicate nationally that 13% of children receiving special education are African American and 12% are Hispanic, and 16% are Indian with the most frequently identified disabilities including speech and language problems (NCES, 2014).

Speech-language pathologists are among the professionals responsible for serving children with speech and language disabilities. As such, it is critical that preprofessionals receive training to improve their language competencies (including multilingual preparation), sensitivity to differences among children, provision of consistently accurate diagnosis, and timely, as well as, appropriate intervention. Critical to accurate diagnosis is the use of measures that reduce the impact of bias in speech and language assessment. The costs for misdiagnosis are numerous, including inappropriate educational planning and delivery, limits to children's educational achievement, and lawsuits resulting from parental complaints.

The focus of the current paper is the first and second authors' analysis of speech and speech-language impairment exhibited by a classic diagnostic case from the 19th century to demonstrate the need and utility of specialized techniques for appropriate intervention with an extreme example of diversity and institutional-societal barriers. Jean-Marc Itard, often described as the Father of Special Education, worked with Victor, who experienced apparent abandonment and years of extreme living conditions (Jean Marc Gaspard Itard, 2014). The authors examine how modern-day tools (phonetic transcription and diary reporting), as well as a significantly expanded knowledge base about speech development in children might have strongly affected the 19th century case. For current professionals, this ancient case provides a modern-day cautionary tale of the parallels to modern-day service delivery to children with complex social and communication needs.

Background

Language is basic to human functioning. Victor of Aveyron is a classic case of a child who experienced conditions so severe as to almost destroy his ability to acquire a language. Victor was abandoned, and there is much speculation about the reasons for his abandonment. Regardless of the reasons for his abandonment, when captured, assumptions were that Victor had lived in the wild for the majority of his life, perhaps with close association with wild animals such as wolves. Although Victor lived before the development of the field of speech pathology, there is much to learn from this case study. His teacher, Dr. Jean Itard, agreed to take on this "forbidden experiment" to educate the feral child[1] when most researchers would not. What follows is a discussion of the diary methods used to document Victor's language, the methods used to describe speech, and the phonetic transcription that may have been used to understand Victor's speech skills as the foundation for language growth.

Jean Marc-Gaspard Itard

Itard was a French physician who specifically focused on diseases of the ear and the education of children who are deaf. He was trained as an otolaryngologist, which, for many, is overshadowed by his work with Victor, the wild boy, resulting in accolades, including praise for Itard as the first youth care counselor, the Father of Enlightenment Science, and model of cross disciplinary work to explain phenomenon based on keen observation and examination (Kolstoe, 1956; Liberman,1982; McDermott, 2003; Shattuck, 1980). He designed the "Itard catheter" or a Eustachian catheter, which is an instrument used for inflation of the Eustachian tube (e.g., Who Named It, n.d.). Itard attempted to teach Victor human language and empathy in order to make him less wild. Although language and emotions such as empathy may not be the only things that separate man from animal, Itard attempted to demonstrate that humans are born with emotional predispositions and the capacity for

[1] A feral child is a human child who has lived in isolation from human contact from a very young age, or has no experience of human care, loving or social behavior, or any use of human language.

language. Emotions and human language, reasoned Itard, distinguish people from animals. Itard attempted to demonstrate that human emotions and language are robust abilities that are difficult to obliterate, even when a child experiences severe deprivation, as was the supposed case with Victor. Moreover, if language is a reflection of intellect, Itard was among the first whose work could be used as evidence that intelligence is modifiable and harmed by lack of appropriate stimulation, a circumstance reflective of the plight of children currently at risk (Kolstoe, 1956; Newman, 2010).

Victor of Aveyron

Victor, or the wild boy of Aveyron, was a young boy who had apparently been abandoned in the woods. When finally captured, he had the scraps of a shirt collar about his neck (McDermott, 2003). The shirt collar and other evidence indicate that Victor, although he had lived a significant amount of time in isolated and harsh conditions, had not been completely without human contact or care. However, during this period, the myth of the capture of a savage who had lived completely isolated was appealing. His age was unknown but was assumed around 12 years old (Jean Marc Gaspard Itard, 2014). According to Plucker (2013), Itard's colleague, Philippe Pinel, a prominent French physician who was an early advocate of humane treatment of insane persons, advised Itard that his efforts to treat Victor would be unsuccessful. Pinel was the first professional commissioned to work with Victor, with no success. He had used Victor's case as the basis for a presentation at a conference that Itard had attended, with Pinel describing Victor as an incurable idiot and a hopeless case as reported by Shattuck (2003). Despite Pinel's assessment, Itard was insistent that Victor could be helped, and Victor was sent to the Institute for Deaf Mutes.[2] Itard was determined to be the first physician to civilize a wild child.

Child abandonment has been a common practice throughout the ages. Historically, children have been abandoned, abused, and/or killed for various reasons, in various cultures. Currently, as in centuries past, a risk factor for abandonment is the economic or social risk the child may pose for the family. Currently, it is routine in the United States to provide services for children. This was not the case in 19th century France, even though the fields of psychology, education, medicine, and other sciences were evolving with a greater concern for the worth of the individual and the individual's development. Speech-language pathology did not exist as a field of study. However, Itard demonstrated the use of techniques that are basic among the functions of speech-language pathologists in modern times, one of which is diary reporting.

Itard's Diary Reporting Method

Despite the fact that no professional standards for case documentation yet existed, Itard's use of the diary method was in keeping with modern diary reporting. According to Iida and colleagues (2012), diary methods involve intensive, repeated self-reports that aim to capture events, reflections, moods, pains, or interactions near the time they occur. Although diary reporting seems to be a modern way of recording data, some of the earliest diary reports date back to 1002 in Japan (e.g., The Pillow Book as translated by McKinney, 2006). A diary report with which current students may be familiar is the *Diary of Anne Frank*. Anne was a young girl using her diary in a creative way to express her inner most thoughts and feelings and to record the

[2] Deaf-Mute is a misnomer, with current support of people-first language. Individuals with hearing loss should be referred to as persons who are deaf (if no usable hearing) or hard of hearing if there is some hearing across the speech range. Many individuals who are deaf or hard of hearing are verbal (considered bilingual if the individual communicates orally and with sign language).

events surrounding her family's time spent in hiding. Itard had a different purpose. He was gathering evidence to document whether the techniques used with Victor were working. In both instances, the diary gives the public a first-hand account of what life was like for the diarist or what trials the writer faced. The use of self-reporting of this kind is exactly what Jean Marc-Gaspard Itard instituted when he began his method and form of recording data on Victor of Aveyron.

As stated earlier, Itard wanted to be the fist physician to civilize a wild child. Meticulous data collection and reporting were necessary to determine the factors that might have influenced positive changes in Victor and that could be argued to other scientists as the factors that produced the desired change. Consistent with the prevailing notions of the Enlightenment Period, Itard attempted to write his observations objectively and with some detachment. His diary reporting made it possible for later researchers to make their own assumptions about what worked or what Itard could have done better. Itard's work with Victor was revolutionary, leading to Edward Seguin's work with the mentally retarded, and later, the work of Marie Montessori, which is still influential currently in early childhood education (Codell, 2006). While his contemporary Pinel recommended treating mentally ill patients kindly by removing their chains (Driving Out the Demons, 2013), Itard was recognized for working intensely and long-term with Victor, an idiot, according to descriptors in 18th century France. In contrast, Pinel had essentially used Victor for demonstration during a conference and resorted to blaming the child when Victor did not progress as quickly as Pinel deemed satisfactory. Itard was unique from his contemporaries in that he was studying human behavior and kept regular diary entries and used his entries to compose one full report. During the Enlightenment Period, there was a significant proliferation of interest and experimentation around the physical sciences, with detailed notes about experiments and production of traditional professional texts for study, without the personal detail and meticulous case study characteristic of Itard's entries. Itard wrote two reports about his work with Victor, with a significant time lapse between them. The first report contained information regarding data from the time of Victor's captivity to the middle of the study, with Itard predicting optimistic outcomes for Victor. Unfortunately, Victor's progress was negligible, and Itard's second report was much more negative. It was not long after the second report that Itard recommended ending the study (McCrone, 1994).

How Itard Organized His Entries

According to Iida and colleagues (2012), traditional diary designs can be classified into two broad categories of time-based and event-based protocols. Itard's recordings contain a mix of these categories. The data collection occurred during an action or event of the participant at a specific moment in time or over a specific amount of time. Itard would request that Victor complete specific actions, and then he would record the data through his diary reports, listing specific occurrences of Victor's actions. This technique aided other physicians with gathering first-hand accounts of his methods. The diary reporting of speech analysis also gave Itard a better view of Victor's accomplishments. The paper and pencil format of data recording allowed Itard to be more specific in his findings. Over a five-year period, Itard would be able to see Victor's accomplishments from the first day of his diary entries. In spite of the significant detail and individual descriptions Itard provided, the diary method he used was limited as there was only one investigator, serving to independently design, implement, analyze and interpret the data.

Itard's Use of Intervention

Itard took Victor to the National Institute of the Deaf for study and developed an intervention for Victor. He wanted to interest Victor in social life, improve his awareness of external stimuli, extend the range of his ideas, teach him to speak, and teach him to communicate by using symbol systems, such as pictures and words. McDermott (2003) suggests that this represented the first Individual Educational Plan (IEP). Itard believed that knowledge could be obtained through the senses; thus, he reasoned that Victor's mental deficiency due to lack of human interaction could be overcome through sensory-training and stimulation.

Although to some Itard failed at teaching Victor language, he still influenced a significant breakthrough in emotional expression. Victor's disinterest in his surroundings and other people gradually turned into interest and affection. Once, Victor ran away for two weeks. After reuniting with his caretaker, Madame Guerin, he began to cry. After cautiously waiting to see what the stern Itard's reaction would be, Victor cried and hugged Itard as well (McCrone, 1994). The meeting is described by McDermott (2003) who recounts from various sources that one night while setting the table, Victor noticed Madame Guerin crying over the loss of her husband and stopped his chore to console her. For a child said to be "hopeless" in all aspects, Victor's ability to sense discomfort or sadness was momentous. Itard considered Victor's reaction as evidence that the wild child was capable of human emotions. Plucker (2013) described Itard's work as critical for eliminating paralyzing attitudes of hopelessness and inertia among medical professionals and the public-at-large. These attitudes reduced incentive for working with so-called mental defectives (Plucker, 2013). Descriptions of Victor's emerging expression of empathy for others are well-documented by Itard. The area of abysmally limited success remained in the area of oral communication. An important question is what would have been the impact of discrete methods of speech analysis to determine if Victor was using speech sounds consistently and similarly to younger children learning French? At the time, children's speech was not closely studied and there was no understanding that children use sounds to mark meaning in ways that may be misunderstood by adults; yet, the sound use can be predictive of later language use. Some errors in sound use are typical while some errors may be indicative of delay. Knowledge of child phonology (sound development) and diary studies that utilized the International Phonetic Alphabet may have been quite beneficial for Victor's continued speech development.

Phonetic Transcription

The International Phonetic Alphabet (IPA), established in the late 19th century and commonly referred to as phonetic transcription, was not available for Itard's use during interventions with Victor. The IPA is a set of symbols developed by linguists to describe the sounds of languages used worldwide. Subsets of the IPA have been used to describe the speech characteristics of children with highly unintelligible speech because of speech disorder or immature, but not disordered speech (Radford, 2012). Dependent on the language, some symbols are consistent with the language's alphabet system (for example, /p/ is a letter and sound symbol); whereas some symbols can be quite different (for example, "x" might be used beneath a symbol to indicate something about voicing). Symbols are available to illustrate tongue position, lip shape, breath characteristics and many other features of sound production. If transcription had been available for Itard's use with Victor, both broad and narrow transcription would have been beneficial for analyzing his speech and determining his developmental level. Analysis might have revealed if Victor was using sound consistently to represent different experiences or objects in the world. The advantages of narrow transcription are that it could have assisted in determining whether Victor was using any subtle sound changes to mark meaning and whether he was just

making undifferentiated and random sounds (Ball, Muller, Klopfenstein, & Rutter, 2009). Whether Victor was using sound consistently or inconsistently, transcription would be useful to determine if sounds typical of the French language were used during any periods of the day, during which routines, and for what purpose. All children learning language acquire knowledge of the language rhythm before acquiring the words. French is a syllable-timed language, according to Bassano (2009), with stress occurring at the end of a syllable concluding an utterance, unlike English where words may have a predictably strong vs. weak stress, with generally less stress on ending syllables in an utterance. If Itard was putting emphasis on Victor learning individual words, he may have been providing Victor a model of language atypical of the model children need for learning the French language. Transcription could be used to determine if Victor was learning the melody of the French language, as well as the syllable structure. If not, one could predict that developmentally inappropriate language experiences might have been disruptive to language learning. Nonetheless, the current investigators believe a flawed language experience was superior to the isolation and abuse that characterized Victor's early years.

A specific example of narrow transcription for several speech disorders, including stuttering comes from a male, age 24, who presented with stuttering behaviors, which had been present since childhood as described by Ball, Müller, Klopfenstein and Rutter (2009). In spontaneous speech, the child used excessive struggle behaviors and facial grimacing. A transcription of his speech illustrated the use of creaky voice at the onset of repetitions, the use of velopharyngeal fricatives, changes in loudness during repetitions, the use of ejectives, and the use of pulmonic ingressive sounds, with specific symbols used to represent the unique voicing and speech sounds (Ball, Muller, Klopfenstein, & Rutter, 2009). Another example of transcription occurred when Radford and Gentry (1997) used phonetic transcription successfully to demonstrate that a family of children exhibited a speech disorder and not a private language as educational officials had initially assumed. Phonetic transcription is very useful in the evaluation of children with low speech output, highly unintelligible speech, fluency disorders, voice problems or second-language influence. Phonetic transcription is a versatile tool, which assists the evaluator in determining whether cross-linguistic interferences increase communication failure and lead to increased bias about children's speech. The use of transcription is beneficial in understanding disfluent speech as well as disordered speech.

If Itard had the capability of using phonetic transcription in addition to knowledge of developmental speech errors, he might have worked more intensely on the structure of Victor's speech and sound development as foundational to word production. The inability of Itard to provide phonetic transcription meant that he was limited in his ability to identify whether Victor's sound system was sufficiently developed to support greater language development. Victor remained essentially low to nonverbal. Itard did teach him the alphabet and the concept of using letters to spell words. Knowledge of developmental order of syllable emergence for words in French may have motivated Itard to persist with speech training for Victor even when Victor reached an apparent plateau in progress. In addition, phonetic transcription may have increased Itard's determination for continuing work with Victor even following the plateau and decline in behavior that he observed.

Victor's case, with his difficulties in acquiring oral speech and language, is similar to present-day children with speech and language disabilities whose histories may be characterized by troubling and extreme circumstances that disrupt language learning. Although Victor made some progress, and Itard's attempts were noble for his time and context, investigators speculate whether Itard's methods contributed to a plateau followed

by a decline in speech-language performance. One unknown regards Itard's use of intonation and words in context as appropriate models for Victor's language learning.

Discussion

The current paper revisits the classic case of Victor, the Wild Child and his teacher, Itard. Victor is purported to have lived in isolation and to have been reared by wolves (an exaggeration) until captured and subjected to intense training to demonstrate that humane treatment and education could considerably affect individuals with disabilities. In spite of gains in his expression of emotion, Victor remained low to nonverbal for the balance of his life. Itard produced two reports, with the first predicting optimistic outcomes, while the second report was more negative, influenced by Victor's declines in performance. The authors speculate on the impact that knowledge of child development, particularly phonological development and the use of phonetic transcription to understand oral speech development and educational planning could have had on Itard's motivation to continue work with Victor. The authors further explore how knowledge of language acquisition among young Francophones would be critical to devising language experiences for Victor in combination with transcription to monitor progress in acquiring French. Itard was a pioneer and revolutionary, credited with influencing the emergence of behavior modification, oral education for the Deaf, and special education for children who are mentally and physically disabled. His use of diary reporting for speech analysis was a step in the right direction. Moreover, diary reporting set the stage for more advanced techniques of speech analysis that serve to increase the accuracy of speech diagnosis and treatment. In spite of the advantages of diary reporting, some limitations are that observations were influenced by some bias, as there was only one observer (Itard), and no methods in place for confirming his observations.

This historical case is a reminder of how far we have come, yet how much is still needed to address the needs of children with language-learning disabilities. Speech disorders are among the most commonly diagnosed disabilities for children in public schools (ASHA, 2008). The actual prevalence of speech disorders is difficult to determine as the landscape is marred by a high rate of language-learning disability diagnosed among minority children, with African American children, for example, representing 20% of children that are placed in special education services. A significant starting place is to improve the training of speech-language pathologists (SLP) and other health-care professionals relative to the impact of speech-language on functioning and the potential and worthy contribution speech-language pathologists can make to the education-health care team to serve all children irrespective of the challenges to progress. It is essential that when provided the opportunity to participate in service delivery that the SLP be knowledgeable of advanced methods and technology for the most effective intervention. The case of Victor is a cautionary tale that remains important for current clinicians. It is vital that we remain skeptical of our methods and means and the impact upon the children we serve, especially for those members of vulnerable populations.

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