

The Cognitive Turn: Replacing Hearing Pathology with a Deaf-centric View

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Abstract

Early research about deaf learners created a deficit view which took decades to begin to change. Through a historical outline of the view of deaf cognition, this article traces the historical impact of this view set by hearing researchers and further challenges the narrative with a Deaf-centric perspective. An analyzation of dated text and a comparison of more recent studies leads to a position which suggests a cultural and systematic change in how deaf learners are viewed and assessed. These changes include the involvement of other Deaf researchers and individuals. Important in both Deaf studies and educating deaf learners, the suggested Deaf-centric view provides educators and other professionals with the challenge of changing what is known about deaf individuals.

Keywords: deaf, deaf/hard of hearing, deaf cognition, deaf studies, deaf education

1. Introduction

Hearing psychologists have shown interest in the cognitive development of deaf and hard-of-hearing children for decades, specifically focusing on areas such as visual attention, language development, and working memory (Blair, 1957; Myklebust, 1960a, 1960b; Pinter & Patterson, 1917). Historically, deaf individuals have been viewed through a medical lens as deviating from the standard human design (Baker-Shenk & Kyle, 1990; McKee et al., 2013). According to Baker-Shenk and Kyle (1990), medical epistemology once held dominance over socio-cultural perspectives, leading to an emphasis on “fixing” deaf people’s hearing through hearing technology. Further claiming specifically, “Tremendous amounts of research ... articulating perceived differences (in psychological state and intellectual ability) ... (have been) described as negative by-products of deafness” (Baker-Shenk & Kyle, 1990, p. 65).

This emphasis can be attributed to the fact that many health researchers lack cultural competence, particularly regarding deaf culture and language (McKee et al., 2013).

Recent research, however, has begun to shift the narrative (Finton et al., 2025; Lillo-Matin et al., 2025; Schotter et al., 2024). Rather than attributing cognitive differences to being deaf itself, emerging studies emphasize the importance of language modality, exposure, and access. For instance, in studying working memory, earlier claims stated that deaf people had visual memory deficits (Blair, 1957). These early studies have been challenged by findings showing that short-term memory (STM) outcomes vary depending on whether ASL or spoken English is used (Bavelier et al., 2006; Hall, 2011; Marshall et al., 2015; Wilson & Emmorey, 2006). These insights challenge the assumption that hearing status alone determines cognitive function, emphasizing instead the role of language experience and modality in shaping memory processes. After years of continued use of the previous narrative, Marschark (1993) challenged the deficit idea, stating that deaf cognition does not show deficits but rather differences. Hauser and Marschark (2008) noted that even in the early 21st century, there were still several “misunderstandings and misconceptions” surrounding deaf cognition. Hence, continued research on the differences in cognitive development in deaf individuals leads to a more deaf-centric view of deaf cognition.

This paper is a result of a graduate course titled *Cognition and Cognitive Development*. The course addressed several areas of cognition and applied the existing theories to compare and contrast what is known about the development and cognition of deaf individuals. A tracing of historical and current literature was collected to critically think about the epistemological differences between researchers and the Deaf community. This paper is not intended to be a scoping or systematic literature review; rather, a presentation of the history of the study of deaf cognition and the impact of the researcher’s standpoint on the overall results.

2. Tracing the History of Cognition Research on Deaf Individuals

Given this foundation, it becomes evident in early research that the focus was on the presumed cognitive deficits in Deaf individuals, as exemplified in Myklebust’s book, *The Psychology of Deafness* (1960b). In this text, Myklebust (1960b) argued that the absence of hearing predetermined cognitive limitations and educational efforts would not enhance success. This etic perspective, grounded in comparing deaf individuals to hearing individuals, framed being deaf as a condition in need of correction (Clark, 1998). These assumptions influenced subsequent research, despite methodological limitations such as failing to document how deaf participants accessed information (Clark & Hoemann, 1991).

Myklebust (1960b) traced the association of sensory deficits with mental deficits back to the 16th century. Following claims made by Pintner and Patterson (1917), Myklebust (1960a, 1960b) argued that hearing loss impeded language acquisition, thus hindering cognitive development. Several previous studies were conducted to focus on auditory response development in children (Carmichael, 1946; Froeschels & Beebe, 1946; Spencer, 1958; and Wedenberg 1956, as cited by Myklebust, 1960b). Myklebust (1960b) also cited Riesen’s (1958) experiment, which subjected 8-month-old chimpanzees to light deprivation. The study revealed irreversible neural changes; this study was used to argue how sensory deprivation,

particularly hearing loss, adversely affects cognitive outcomes. In Myklebust's (1960b) book, Riesen also interpreted Hebb's (1958) work on sensory isolation as support for the idea that hearing loss reduces environmental contact and disrupts psychological equilibrium. Additionally, vision was placed as a foreground sense due to its limited special range and hearing was considered a background sense due to its omnidirectional nature which was believed to hinder Deaf children to develop language acquisition through vision (Myklebust, 1960a, 1960b).

The early psychological research into deaf cognition was largely shaped by deficit-based assumptions, particularly those advanced by Myklebust (1960b). Drawing on rigid interpretation of Piaget's (1936) theory, Myklebust (1960a, 1960b) concluded that deaf children would struggle to develop cognitive abilities due to the absence of auditory and verbal symbolism. However, Piaget (2003) emphasized sensory-motor interactions broadly, rather than prioritizing auditory input. Cognitive development stems from early sensory and motor experiences, but Piaget (2003) did not specify that hearing was essential. Therefore, building on Piaget's (2003) framework, Deaf children can form symbolic understanding through alternative, non-auditory sensory and motor pathways, which are equally foundational in building cognitive structures. Myklebust's (1960a, 1960b) misinterpretation reinforced the inaccurate belief that below-average IQ scores and delayed language acquisition in deaf children indicated intellectual inferiority. Several studies reported lower IQ scores among deaf children (Blair, 1957; Oléron, 1950; Peterson & Williams, 1930). In Blair's (1957) study, deaf children underperformed on abstract reasoning tasks but excelled on visual memory tasks like the Knox Cube Test. Blair attributed these strengths to psychological compensation rather than the ability to do abstract reasoning. Further, the use of the individual subtests of the Chicago Non-Verbal Examination by Myklebust (1960b) were not reported in detail in Blair's (1957) study, which ignored the broader conclusions about visual strengths and educational recommendations, like visual learning strategies over auditory memory, acknowledging unique cognitive adaptations.

Contrary to Myklebust's (1960b) narrative, several studies found only minimal cognitive differences between deaf and hearing children (Lavos, 1950; Shirley & Goodenough, 1932). Similarly, Shirley and Goodenough found no correlation between severity of hearing loss and test performance while Lavos emphasized that improved test scores among deaf participants were due more to familiarity with the test format than to inherent differences in intelligence. Despite these findings, Myklebust (1960b) often disregarded and downplayed these findings, choosing instead to highlight selective data that aligned with Myklebust's belief that sensory loss impaired cognition.

Myklebust's (1960b) bias also extended to his interpretation of other studies. In analyzing Treacy's (1952) data, Myklebust (1960b) emphasized slightly below-average total intelligence scores for deaf and hard-of-hearing children but failed to account for the study's lack of demographic context or the high dispersion revealed by the coefficient of variation. This variability suggested uncontrolled participant backgrounds, weakening any generalizable conclusions. Similarly, Myklebust (1960b) cited Springer's (1938) research without acknowledging its key finding, which indicated that deaf and hearing children

showed no significant differences on non-auditory intelligence tests. Instead, Myklebust (1960b) dismissed Springer's (1938) study as unreliable based on the participant pool, further illustrating Myklebust's tendency to discount evidence that contradicted his assumptions. Myklebust (1960b) also cited Neyhus's (1962) study, which found that socially well-adjusted deaf adults scored above average on the performance section of the Wechsler Adult Intelligence Scale. Neyhus (1962) concluded that successful vocational and social integration correlated with higher-than-average intelligence in deaf individuals. However, Myklebust (1960b) did not offer his rationale for disagreeing with this conclusion and ultimately maintained that lack of auditory input hindered cognitive development. In an earlier collaboration, Myklebust and Burchard (1945) claimed deaf children had lower IQs and behavioral problems but paradoxically concluded that assessments should be administered by professionals familiar with Deaf communication needs. This persistent framing reveals how early cognitive research was shaped less by empirical data and more by prevailing medical ideologies that associated normalcy with hearing.

In contrast, Furth (1964) offered a theoretical and empirical challenge to these assumptions, asserting that deaf cognition should be understood as different, not deficient. Furth (1964) distinguished between language ability and conceptual understanding, emphasizing that verbal behavior may not always reflect deeper cognitive insight. For example, a child might appear fluent in using a word like "sufficient" without fully grasping its meaning or might understand complex ideas like money without being able to define them (Furth, 1964). This understanding led Furth to define intelligence as the ability to solve complex problems and apply generalizable rules, rather than relying solely on language performance as a proxy for cognitive ability.

Drawing on Piagetian theory, Furth (1964) used tasks based on the INRC framework, which are identity, negation, reciprocity, and correlation (Ginsburg & Oppen, 1988), to assess both deaf and hearing children. Furth (1964) found no significant differences in how the two groups processed logical and spatial tasks when assessed through nonverbal, conceptually grounded measures. Templin's (1950) findings supported this view, noting comparable performance between deaf and hearing participants on classification tasks, though differences appeared on analogical reasoning, often due to unfamiliarity with testing formats, particularly among students in residential schools. Furth (1964) attributed these inconsistencies not to intellectual limitations, but to linguistic deprivation and a lack of culturally competent research design.

Crucially, Furth (1964) argued that the absence of early language input could temporarily hinder development, especially in tasks where language mediates problem-solving. However, Furth (1964) maintained that this delay was not a permanent condition. Through access to language, experience exchange, and conceptual practice, deaf individuals could achieve cognitive development on par with hearing peers (Furth, 1964). This perspective laid the foundation for a difference-based approach to deaf cognition, recognizing the need for equitable, modality-appropriate assessment rather than interpreting nonstandard performance as intellectual failure.

2.1 Methodological Flaws and the Etic Perspective in Early Research

In Myklebust's (1960b) text, a deficit model to "fix" the broken deaf individual was the central theme (Clark, 1998). This etic view by a hearing researcher was grounded in audism,

spotlighting what deaf individuals are lacking compared to their hearing peers (Clark, 1998). Older research followed Myklebust's model, causing skepticism about the results. Studies failed to completely describe their deaf participants and how they access information (Clark & Hoemann, 1991). Specifically, research was often conducted in spoken English, an inaccessible language for most deaf individuals, or through gestures (Clark, 1998). Further, at times the conclusions of studies were altered to show deficits which were not present (Clark, 1998).

In earlier studies, research was often conducted in spoken English, an inaccessible language to many deaf individuals, or through inconsistent gestures (Clark, 1998). Furthermore, at times the conclusions of studies were altered to show deficits which were not present (Clark, 1998). Vernon (2005) pointed out that pre-1930 studies were often poorly designed and failed to appropriately assess the intelligence of deaf children. For example, Drever and Collins (1928, as cited in Vernon, 2005) found that deaf children performed comparably to hearing children, and argued that language was not a confounding factor in interpreting the test scores. Therefore, the study conducted by Day et al. (1928, as cited in Vernon, 2005) can no longer be considered reasonable in claiming that deaf children were intellectually inferior to hearing children but equal to children with intellectual disability.

Additionally, Vernon (2005) emphasized that many early 20th-century studies were conducted on children with intellectual disabilities who had been placed in schools for the deaf, thereby skewing data and reinforcing inaccurate conclusions. Importantly, Vernon (2005) argued that valid studies and assessments involving deaf individuals must be conducted by professionals with expertise in deaf-specific psychological assessment. Studies led by such professionals have generally shown no difference in intelligence between deaf and hearing children (Vernon, 2005).

Vernon (2005) further noted that many early studies failed to account for the medical backgrounds of participants. In cases where brain-affecting illnesses caused both being deaf and lower IQ, researchers wrongly attributed cognitive delays to the absence of hearing. As a result, Vernon (2005) clarified that being deaf is not causally linked to intellectual disability. Instead, shared underlying medical conditions may account for overlapping outcomes. Moreover, Vernon (2005) provided evidence that neither the degree of hearing loss nor the age of onset correlates directly with IQ, further debunking longstanding assumptions about deaf cognitive inferiority.

Additionally, McKee et al. (2013) highlighted that deaf individuals were historically subjected to treatments and training aimed at making them functionally hearing, primarily through the eugenics movement and oralist practices. These perspectives and epistemological frameworks have significantly shaped historical research, particularly concerning cognition in deaf individuals (Blair, 1957). Critically, these views continue to influence contemporary studies on deaf epistemology and cognitive development to a greater or lesser extent (Geers et al., 2003). Understanding this historical context is essential for examining its relation to and impact on ongoing studies.

3. Contemporary Approaches to Deaf Cognition with Deaf Perspective

As a result of a critical look at historical practices and the involvement of Deaf researchers, modern research has increasingly moved beyond hearing-centered models of cognitive science to embrace more culturally aware frameworks, such as *deaf-know* and deaf-centric approaches. *Deaf-know* refers to “mentors who are presumably hearing but have experience working with deaf mentees” (Braun et al., 2017 p. 9). As such collaborators became more involved in research, interpretations of deaf cognition began to shift. These frameworks challenged traditional deficit-based assumptions by reframing deaf cognition not as impaired, but as distinct, rooted in visual, spatial, and sign-based modalities, and linguistic pathway that are equally valid for learning and knowledge construction. From this standpoint, earlier claims of cognitive inferiority among deaf individuals are re-examined not only for methodological flaws but also for its exclusion of deaf people and how language is accessed. Studies such as those by Dye et al. (2009), Emmorey (2014), Hauser and Marschark (2008), and Wilson and Emmorey (2006) reflect this shift, offering more nuanced views of how language modality and sociocultural context shape human cognition.

3.1 Etic Perspective Challenge

Ladd (2003), a deaf researcher, challenged the etic nature of much of the research historically conducted on deaf individuals. Ladd (2003) continued to push the argument about the importance of the internal perspective of the deaf community. Ladd (2003) outlined how the focus on the physical condition removes deaf individuals from the discussion. The continued medically fragile or damaged view comes from those outside the community, lacking the appropriate knowledge and experience with the cultural-linguistic model of research (Ladd, 2003). Ladd (2003) emphasized that deaf culture and deaf individuals themselves must play a central role in research concerning the deaf experience. Similarly, Clark (1998) advocated for a shift away from hearing-centric frameworks, urging researchers to focus on what was happening with deaf individuals, within their environments and communities, rather than what is being done to deaf individuals. This change in thought enables a more accurate and holistic understanding of deaf psychology and cognitive development.

3.2 Through a Probabilistic Epigenesis Lens

Clark (1998) proposed examining Deaf cognition through the lens of probabilistic epigenesis, a concept introduced by Gottlieb (1970). This model views development as influenced by dynamic interactions between genes, environment, behavior, and neural activity. Additionally, this model shifts away from linear causality and deficit thinking. Defined as the multidirectional influences impacting the development of a child, this idea removed the one directional view of genetics or environmental factors from development (Gottlieb, 1970). Thus, the child’s genetics, environment, cognitive development, and decisions would all work together to support overall development. Clark’s (1998) claim shifted research *about* deaf individuals to be one *with* deaf individuals and their environment. Centering the deaf individual, or in this case the deaf child, ensures fully comprehensive research in the understanding of how they are situated in the world and within their cognitive development.

The need for this paradigm shift arises from the enduring harm caused by the dominant “master narrative,” as described by Harris and Loeffler (2015). This narrative has systematically excluded deaf perspectives and contributed to language deprivation in educational settings. Harris and Loeffler (2015) argue that this deprivation stems directly from outdated assumptions about deaf cognition. Starting to question how a deaf child’s development is impacted, a different, more comprehensive view could be used as a result. This view would no longer have the absence of hearing to be the root cause of limited cognitive skills.

3.3 Modern Research on Deaf Cognition

Cognition itself is complex with multiple layers. The intent of this paper was not to elaborate in detail a collection of cognitive research on deaf individuals, but rather critically look at the history and the impact of its narrative. There are new important findings from recent studies which are important to note, especially as they relate to language. Mitchell (2017) outlines how previous research has shown the sensitivity of visual information increases for deaf individuals, contributing to the understanding of visual perception skills in deaf individuals, leading to the importance of a visual language like sign language. Further, children's attention and impulse control improved as they got older, but also the language foundation of each child impacted both skills positively (Dye & Terhune-Cotter, 2022). More specifically, language skills were better predictors of performance on the presented tasks than the hearing level (Dye & Terhune-Cotter, 2022). The results from this study support previous claims made by Morgan and Dye (2020) and Hall et al. (2018) indicating that the earliest exposure to language for deaf children positively supports the development of executive functioning skills. Infants are born ready to absorb information and acquire language without any direct instruction (Trexler, 2023). For deaf infants and toddlers, this concept is critical. The earliest exposure to sign language is critical to prevent significant delays in language (Mayberry, 1998). Through neurolinguistic studies, research shows that there are structural differences in the brains based on the age of exposure to sign language. Mayberry et al. (2011) showed the importance of early exposure to language through brain imaging. Adult participants who had early exposure to sign language had brain activity in the typical language regions (Mayberry et al., 2011). Alternatively, those who were exposed later in life demonstrated a “reorganizing” of language throughout the brain (Mayberry et al., 2011). Further, the brain matter itself differs between deaf and hearing individuals because of the age of language exposure (Pénicaud et al., 2013). Thus, early exposure to language provides the deaf child with the most opportunities to develop reading and metacognitive skills. Deaf children require explicit instruction in many areas to develop certain skills due to their environment and the lack of incidental learning opportunities. In their homes, and often in schools, deaf children do not have the access needed to obtain auditory information which may be critical to skill development (Hopper, 2025; Hauser et al., 2010). Thus, visual language provides effective access to information, a critical component for neurological and cognitive development.

More concrete evidence in this area is still needed. Maintaining a research narrative which supports the development of a visual language has been shown to support cognitive success, which is critical for the field of deaf education. This contemporary research and any future research which maintains a deaf-centric view requires further development and translation for parents and educators to be able to interpret and apply the information with deaf children.

4. Conclusion

Research about deaf cognition has changed significantly since the 1960's and the overuse of information from the book, *The Psychology of Deafness*. More recent research provides a glimpse into understanding how deaf cognition is different, not lacking. Understanding how different does not mean lacking is important to remember when educating young deaf learners and while conducting future research. Two key questions remain in the field of deaf studies and deaf education: What do we know about deaf cognition and what do we still need to discover? Current research is not enough to fully understand how the deaf brain develops and functions, thus longitudinal research on the impact of long-term sign language exposure and use, the effects of cochlear implants, and how to best evaluate deaf learners are needed. Continued research and discussion about this area is important to change the understanding and the narrative used by medical professionals and educators regarding deaf individuals. Deaf researchers must be involved and lead discussions to ensure the research is no longer happening *to* them but rather *with* them (Clark, 1998).

Conclusively, it is essential to recognize both emic and etic perspectives when interpreting results and conducting research involving deaf children. For example, an etic perspective from outside the deaf community, such as that of hearing non-signers, often led to misinterpretations and conclusions that deaf children had lower intelligence compared to hearing children. These misinterpretations are evident in studies by Myklebust and Burchard (1945), Myklebust (1960a, 1960b), Oléron (1950), Peterson and Williams (1930), and Pintner and Paterson (1915). In contrast, Vernon (2005) presented a different perspective, demonstrating that deaf and hearing children are equal in intelligence and mental capacity. This shift in interpretation was informed by an emic perspective that included deaf cultural knowledge and sign language awareness. Recent studies support this view of supporting a deaf child's language development will further develop their cognition. Infants are born ready to absorb information and acquire language without any direct instruction (Traxler, 2023). Language is learned from parents or caregivers interacting with the infant (Kuhl, 2011). Additionally, after a year of language exposure, the infant is more ready to sharpen the language skills of the language they have been exposed to instead of learning a new language (Kuhl & River-Gaxiola, 2008). For deaf infants and toddlers, this concept is critical. The earliest exposure to sign language is critical to prevent significant delays in language (Mayberry, 1998). Thus, early exposure to language provides the deaf child with the most opportunities for cognitive development.

Many earlier studies were poorly designed and failed to account for important variables such as the diversity of deaf children's hearing conditions, age of language acquisition, and medical or health histories (Vernon, 2005). These factors are crucial for appropriately selecting and screening participants. Further research on the intelligence of deaf children and adults is necessary, using contemporary psychological assessments that serve as a counternarrative to earlier and biased studies. As a result, deaf scholars today often bear the burden of both advancing knowledge and repairing the damage caused by decades of exclusionary research practices.

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