INQUIRY INTO FOUNDATIONAL AND DISABILITY SUPPORTS AVAILABLE FOR CHILDREN AND YOUNG PEOPLE IN NEW SOUTH WALES

Organisation:Deaf AustraliaDate Received:31 March 2025



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To Whom It May Concern:

Thank you for the opportunity to provide a submission for the Inquiry into Foundational and Disability Supports Available for Children and Young People in NSW.

Please note that this submission paper and Attachments A-B should be read as a whole, as together they form our submission.

THE IMPORTANCE OF AUSLAN AS AN EARLY INTERVENTION STRATEGY

Deaf Australia stresses the importance of Auslan as an early intervention strategy to support children and young people's overall development, health and wellbeing. This is discussed in detail in the paper 'Exploring the Benefits of Auslan in Early Intervention Approaches for Deaf Children' which is included at Attachment A. As this paper notes, access to Auslan is an important early intervention strategy to combat language deprivation, which can cause cognitive delays and mental health difficulties across the lifespan. It should be noted that this does not necessarily preclude the use of additional interventions. Rather, the benefits of Auslan as an early intervention strategy must be acknowledged given the various benefits to education, cognitive development, self-efficacy, cultural identity and societal engagement associated with its usage (Source: https://deafaustralia.org.au/statements-papers/exploring-the-benefits-of-auslan-in-early-intervention-approaches-for-deaf-children/).

NEEDS ASSESSMENT TOOLS

At present there are not enough Auslan needs assessment tools available. A standardised tool called the 'Assessing Auslan Development Tool' exists which measures Auslan competence in children from 4-11 years. This tool was published in 2016 by the Victorian Deaf Education Institute in partnership with Associate Professor Adam Schembri and La Trobe University (Source: https://www.deafeducation.vic.edu.au/initiatives-and-programs/assessing-auslan-development-tool). However, there are not currently enough standardised tools available to measure Auslan competence in people of other ages. There is also a lack of standardised Auslan versions of other needs assessment tools in other domains. For example, we understand that many psychometric assessment tools (such as Kessler-10, WHODAS, LSP-16, PEDI-CAT, AIM-3, ABAS-3 and Vineland-3) are not available in Auslan. Deaf Australia is actively advocating for all governments to support continued improvements in the needs assessment tools space, to ensure future tools used meet the needs of D/deaf and hard of hearing individuals. This will be a critical step in addressing gaps affecting children and young people going forward.

EDUCATION

Deaf Australia would like to draw attention to its Disability Royal Commission submission *Education for Deaf People*, which was written by Deaf Australia in October 2022 (see Attachment B). In this submission, Deaf Australia recommended that:

"In order to achieve inclusive education for deaf learners, it is critical that all deaf children, regardless of where they attend school, are able to access high-quality instruction in a sign language.

> 1. This means that accommodations such as interpreters and note takers must be accompanied by opportunities to study with other deaf students and with teachers, including deaf teachers, who are themselves fluent in Auslan, by the provision of bilingual learning materials, and by opportunities to study Auslan as a school subject.

> 2. A central issue for achieving quality inclusive education for deaf learners is the provision of teacher education that supports deaf candidates' achievement of teaching credentials, teachers' proficiency in Auslan, knowledge and development of quality bilingual curricula and pedagogy, and awareness of the need for high expectations for deaf learners as bilingual learners.

3. There is also a need for schools to support parent and deaf community engagement.

4. As described by several recent international studies, effective models of inclusive education for deaf learners include quality deaf schools which employ a high proportion of signing deaf teachers and administrators.

5. Deaf schools can also provide supports and resources to deaf learners enrolled in mainstream schools, including access to a signing peer group and to deaf teachers.

6. For deaf children living in rural areas, the role of deaf schools in supporting mainstream school environments may be especially crucial, as they can support distance learning and opportunities to attend a deaf school on a part-time basis.

7. Inclusive education for deaf learners can also include co-enrolment models where a team of deaf and hearing teachers provide simultaneous instruction in sign language and spoken language to classrooms of deaf and hearing students. A co-enrolment model may also involve the formation of a bilingual program for deaf learners in separate classrooms within a mainstream school. In these settings, it is important for non-deaf learners to also receive instruction in sign language."

We hope that all of the above recommendations will be considered and implemented due to their crucial impact on deaf learners' overall development, health and wellbeing.

AUSLAN INTERPRETING

The need to increase the number and quality of Auslan interpreters was a key recommendation of the Royal Commission into Violence, Abuse, Neglect and Exploitation of People with Disability (Recommendation 6.2). In the joint government response to the Commission's recommendations released in 2024, the Australian Government, together with state and territory governments, acknowledged the importance of Auslan interpreters and Deaf interpreters and translators for people who are D/deaf or hard of hearing (Source: https://www.dss.gov.au/responding-disability-royal-commission/joint-government-response).

Deaf Australia calls on all governments to implement the Royal Commission's Auslan workforce recommendations. A workforce strategy needs to be developed to boost the Auslan and Deaf interpreter

workforce, based on "a robust demand-supply analysis to quantify the current gaps and shortages in interpreting service" (Source: <u>https://disability.royalcommission.gov.au/publications/final-report</u>). The strategy should include costed initiatives to:

- *"increase the number of Auslan interpreters, including the provision of scholarships and stable ongoing employment opportunities, particularly in under-serviced areas;*
- support specialisations in health, legal and other critical sectors (including minimum qualifications);
- provide ongoing professional development and industry standards to support a high-quality interpreter workforce;
- increase and retain Auslan interpreters who are First Nations or from culturally and linguistically diverse backgrounds; and
- raise awareness and promote pathways to becoming an Auslan interpreter (Source: <u>https://disability.royalcommission.gov.au/publications/final-report</u>).

This will help to address critical gaps in the current Auslan workforce and help improve the accessibility of information and communications in line with *Australia's Disability Strategy 2021-31*.

DEAF MENTORS AND AUSLAN TUTORING

Deaf Australia asserts that access to Deaf mentors and Auslan tutoring is essential for D/deaf and hard of hearing children. Deaf mentors serve as positive role models for D/deaf and hard of hearing children and are specifically selected Deaf adults, often from deaf families, who have navigated challenges to achieve academic, professional and personal success. Deaf mentors have specialist knowledge arising from being deeply involved and active in the Deaf community. They possess a profound understanding of the challenges and strengths associated with being deaf. Their lived experiences offer invaluable insights into the nuances of Deaf culture, communication preferences, and the emotional aspects of navigating a predominantly hearing world. Critically, they act as language models and provide a crucial link to the Deaf community. This vital intervention is instrumental in fostering positive, empowering and enduring experiences for mentees and to build confidence, self-esteem, and a sense of belonging among these children, inspiring them to pursue their goals with determination and resilience. More information on the importance of access to Deaf Culture and the Auslan language can be found at Attachment A.

We hope this information is useful. Deaf Australia values the opportunity to be part of the Inquiry into Foundational and Disability Supports for Children and Young People in NSW. We look forward to continued improvements in this space, to ensure that overall development, health and wellbeing of children and young people who are D/deaf and hard of hearing is supported throughout their lives.

Yours sincerely,

Shirley Liu, Interim CEO | Deaf Australia

About Deaf Australia:

Deaf Australia was founded in 1986 as a not-for-profit organisation that represents all Deaf, Deafblind, and hard of hearing people, and others who are fluent and knowledgeable about Auslan. The focus has and continues to be on developing access to information and accessible communication. We work with Australian governments and collaborate with key stakeholders to make sure that Australia complies with the United Nations Convention on the Rights of Persons with Disabilities. The UN Convention and the National Disability Strategy guides our work; we aspire to achieve equity for Deaf people across all areas of life. Deaf Australia advises that this document may be publicly distributed, including by placing a copy on our website.



Exploring the Benefits of Auslan in Early Intervention Approaches for Deaf Children

A report commissioned by Deaf Australia and Deaf Connect

By Dr. Michael D'Rosario and Emma Dawson





We acknowledge the traditional owners of country and pay respect to past, present and emerging Elders.

We also acknowledge and respect the members of the Deaf community in Australia, who preserve their rich heritage, culture, and our language; Auslan (Australian Sign Language). We also acknowledge our custodians of Auslan, promoting awareness, equality, and access through our sign language. Through Auslan, we inspire future leaders in our Deaf community to continue our legacy and heritage.

View the companion reports and Auslan translations here

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About Deaf Australia

Deaf Australia was founded in 1986 as a peak national advocacy body that represents all Deaf, Deafblind hard of hearing people and others who live in Australia and use Auslan as their language of preference. The focus has and continues to be on developing access to information and accessible communication.

We work with Australian governments and collaborate with key stakeholders to make sure that Australia complies with the United Nations Convention on the Rights of Persons with Disabilities. The CRPD and the Australian Disability Strategy guides our work; we aspire to achieve equity for Deaf people across all areas of life.



About Deaf Connect

Deaf Connect is the largest whole-of-life service provider and social impact organisation for Deaf, Deafblind and hard of hearing Australians. We stand with the Deaf community to build capacity and influence social change while paying respect to history, culture and language.

Our focus is on community and empowerment, supporting Deaf Australians and their families to make choices and actions to thrive in life, while delivering on a national agenda to improve equity for the Deaf community, and to remove systemic cultural and language barriers.



About Per Capita

Per Capita is an independent progressive think tank, dedicated to fighting inequality in Australia. We work to build a new vision for Australia based on fairness, shared prosperity, community and social justice.

Our research is rigorous, evidence-based and long-term in its outlook. We consider the national challenges of the next decade rather than the next election cycle. We ask original questions and offer fresh solutions, drawing on new thinking in social science, economics and public policy.

Our audience is the interested public, not just experts and policy makers. We engage all Australians who want to see rigorous thinking and evidence-based analysis applied to the issues facing our country's future.

About the Authors

Dr. Michael D'Rosario, Chief Economist

Michael is an experienced economist/econometrician and interdisciplinary research lead with longstanding associations and experience working with the NFP sector, universities and social impact focused organisations. He has worked in community development in both Australia and Asia. Prior to working with PerCapita, Michael served as a chair at Deakin University, the manager of a large research program/organisation affiliated with the University of Melbourne, the ESG & Impact Advisor to CPA Australia, and as Research, Policy and Communications Advisor to the Victorian Aboriginal Legal Service and the National Aboriginal and Torres Strait Islander Legal Service. Michael has published extensively in Economics, Data Science journals and led a number of large economic evaluations.

At PerCapita, Michael serves and Chief Economist and Head of Data Science, focusing largely on leading economic evaluation, economic modelling, ensemble forecasting and interdisciplinary research projects. Michael has served as a health economist and advisor to a number of refugee, youth and health focused charities, including Anchor, YouthConnexions, DCS, Deaf Connect, Deaf Australia, as well as peak hygiene charity Pinchapoo. In addition to working with PerCapita, Michael advises on the design of courses in Research Methods with a leading Australian university.

Prior to working in the NFP sector Michael worked with PwC, KordaMentha, AusAid, Victoria University and the University of Melbourne. Michael has served on a number of university boards as a Non-Executive Director and Deputy Chair. Michael is a recipient of the LexisNexis/Butterworths Prize, an Australia Endeavour Award, and the Alfred Deakin Medal.

Emma Dawson, Executive Director

Emma has worked as a researcher at Monash University and the University of Melbourne; in policy and public affairs for SBS and Telstra; and as a senior policy adviser in the Rudd and Gillard Governments. She has a research background and policy expertise in economic inequality, immigration, gender equality, disability inclusion, retirement incomes and social security.

Emma has published reports and articles on a range of policy issues. She is a regular contributor to Guardian Australia, The Age/SMH and the Australian Financial Review and is a frequent guest on various radio programs nationally. She appears regularly as an expert witness before parliamentary inquiries and often speaks at public events and conferences in Australia and internationally.

Emma is the co-author of Per Capita's landmark report Measure for Measure: Gender Equality in Australia, and co-editor, with Professor Janet McCalman, of the collection of essays What happens next? Reconstructing Australia after COVID-19, published by Melbourne University Press in September 2020.

Overview

While the benefits of sign language are readily apparent, the role of the timing of language intervention, and early intervention are not readily apparent to many who do not possess a thorough understanding of the benefits of such intervention and the process of language acquisition. The decision to support sign language as the first language for a deaf child is a complex one for parents, given that most deaf children are born into hearing families. Nonetheless, the nearly half century's worth of research supports the role of sign language in early intervention.

Auslan is the language of the culturally Deaf and hard of hearing community in Australia. While sign language usage has been shown to benefit cognitive development and support better learning outcomes, it may be argued that Auslan has not received the same level of support at a national level that European and American sign languages have within their respective jurisdictions over the past 50 years, and consequently there is a dearth of research considering the benefits of early language intervention employing Auslan from an economic perspective. There is, however, a well-established qualitative benefits and developmental research evidence base, that evidences the benefits of sign languages including Auslan, and other European sign languages and American Sign Language, that is instructive and rigorous.

This commissioned research report seeks to summarise the benefits of Auslan and early intervention strategies to inform policy and support a deeper understanding of the role of Auslan as a language modality and the benefits of early intervention as a developmental strategy.

Understanding Deafness through a cultural lens

Members of the Deaf community usually see themselves as forming a linguistic-cultural community, although some may also identify with the disability sector to varying degrees.¹ This is frequently not acknowledged or well understood within Australian society.² As noted by the WFD (2019) "Deaf people consider themselves as a linguistic and cultural group, with highly complex natural languages but the rights of deaf people are however assured through disability policy, legislation and international instruments. Deaf identity is not a monolithic entity, and a person can also have other identities relating to gender, race, disability, socioeconomic status."

Deaf, Deafblind and hard of hearing people in the Deaf community use Auslan as their preferred language in Australia: it is considered the language of the Deaf community. It is therefore critical to consider the role of Auslan and its benefits to the Deaf community, and the associated economic benefits more broadly. Deafness is too frequently misunderstood by policy makers, because it is frequently viewed employing a medical-disability model exclusively, with limited regard for the cultural-linguistic lens. This is because there is limited consideration given to the evidence base, and many researchers within policy units possess limited knowledge of the Deaf community.

This report is informed by direct engagement with the Deaf community and the evidence base pertaining to early intervention, Auslan usage, bi-modal bilingualism and the impacts of deafness.

Scope of Research

The present report considers the economic benefits of Auslan accounting for the critical benefits to wellbeing, health literacy, services access and the productivity of the economy. The research seeks to account for the benefits associated with Auslan as a community-enabling and culturally supportive language.

Per Capita's economic evaluation framework and modelling has been developed using publicly available information, as well as data supplied by commissioning entities. The assumptions are based on credible research that has been subject to peer review, with the assumption set then applied to the economic and financial datasets to arrive at our impact estimates.

We employ a scenario forecasting approach, deriving from the extant literature that explores the impacts and benefits of Auslan to consider a scenario where Auslan did not exist, and what the costs and impacts of this significant absence would be. The absence of longitudinal data capturing Auslan capability and language exposure/deprivation data involving an adequate sample cohort, over an adequate time interval, makes primary estimation challenging.

Given this dearth, we rely on shorter episodic research and smaller sample sizes, and therefore there is a degree of uncertainty associated with the estimate set. All studies of this nature evidence a degree of uncertainty and we therefore note that the caution afforded this category of studies be afforded the present report.

While all estimates evidence a degree of uncertainty, we assert that the modelling is based on a sound research base and assumption set and offers a conservative evaluation of the benefits of early language intervention.

Key Terminology

The terms deaf and Deaf will be used according to their cultural definitions amongst the Australian Deaf community, consistent with the extant literature and the guidelines provided by Deaf Australia. People who identify as "culturally Deaf" are more likely to have been born deaf or become deaf early in life, are prelingually deaf and use sign language as a primary or preferred mode of communication. Deaf people of the western world identify as a culture with distinct languages and customs, in the same way that people of any particular ethnic group may identify as belonging to that culture, with specific practices and approaches to communication.

¹ This 'identification' may be due to the process of categorisation in civic systems, rather than identification as a member of the disability community.

² For an excellent summary article on Deaf Culture see Carty, B., 1994. The development of deaf identity. In The Deaf Way: Perspectives from the International Conference on Deaf Culture, Washington DC (Vol. 40, p. 43). For a note on the experiences of Deaf Individuals In the health care system see Beaver, S. & Carty, B. (2021). Viewing the healthcare system through a deaf lens. Public Health Research and Practice, 31(5):e3152127.

Auslan – Auslan is the name given to Australian Sign Language, which is the natural language signed by members the Australian Deaf, Deafblind and hard of hearing community

Deaf – The use of a capital "D" in "Deaf" is often used to identify a person or a group as sharing the language and culture of the Deaf community. An individual that identifies as Deaf may employ a number of different methods of communication including different modalities, or multiple modalities. However, there is an emerging trend away from this usage of "D" (see, e.g., Kusters et al, 2017), as it can be seen to create unnecessary dichotomies within a community which exhibits considerable diversity. It is most often used when referring to groups or entities such 'the Deaf community', rather than when referring to individuals.

deaf – denotes auditory deafness, clinical deafness rather than referencing Deaf culture and the Deaf community. However, see previous entry for information about changing usage of "d/D".

Bi-modal bilingualism – describes bilingualism which incorporates the use of languages in both oral and signed modalities (herein Auslan and English).

BANZSL – British, Australian and New Zealand Sign Language is a language family, of which British Sign Language, Auslan and New Zealand Sign Language may be considered to be member languages.

HALY – Health Adjusted Life Year: A burden of disability measure based on how many years of life are lost or affected by the condition.

DALY – Disability Adjusted Life Year: A type of HALY method based on accounting for the number of years lost, and number of years impacted by a disability.

QALY – Quality Adjusted Life Year: A type of HALY based on making an estimate of the quality of life, hence the name Quality adjusted life year. The measure includes both a quantity of life and quality of life estimate.

YLL – Years of Lost Life due to disability

YLD - Years of Life impacted by a disability

Cultural dysfluency – People experience cultural disfluency if a culture-based expectation is not met, or where they lack a cogent knowledge of their culture due to separation or a lack of exposure.

Early intervention – the process of identifying risks and engaging in appropriate interventions to minimise the likelihood of adverse consequences for children and young people. Herein unless otherwise stated the use of the expression pertains to Auslan/Sign language based early intervention

Language deprivation – The deprivation of access and exposure to language. May result in cognitive deficits and 'language deprivation syndrome', a form of language and cultural dysfluency.

Language acquisition – the process of acquiring a first language, sometimes also a second language if it is acquired very early. First language acquisition is acquisition of the native language of the individual. Language acquisition should be distinguished from language learning, which is a more structured process for learning a second or subsequent language.

Research approach

In formulating a viable and appropriate research strategy to undertake the research and associated analysis, we engaged in a series of consultations with a number of different research partners and stakeholders from the Deaf community, the research community and with several peak organisations within the sector.

Presentation of research strategy and methodology to stakeholders

Upon establishing a viable research framework we initiated a consultation process with representatives of the Deaf community and services sector. During these consultations we outlined the following;

- 1. The methodological approaches proposed for the research
- 2. The availability of different data sources (and those that required specific permissions)
- 3. The approaches available for the dissemination of research

We obtained feedback from the group and sought to reflect this feedback in the research methods to the extent appropriate.

Research Reference and Advisory Group

While engaging in this research we have sought feedback from and consulted with experts from the Deaf community, academia, and health economics. The reference group informed the following aspects of the research.

- Offering insights into new and compelling research
- Offering comment on the DALY and benefits evaluation methods
- Providing support in securing key third party datasets
- Supporting the communication and dissemination of findings

Members of the Research Reference and Advisory Group

We would like to acknowledge the significant contribution of Prof. Breda Carty in her review of the analysis presented within this report and her support in the presentation and dissemination of the analysis. We would also like to acknowledge the significant efforts of the reference group.

Prof. Breda Carty – Emeritus Professor of Deaf Studies – Macquarie University

Matt Lloyd Cape – Manager – Research and Advocacy – PerCapita

Brent Phillips - Chief Impact Officer - Deaf Connect

Jen Blyth - Chief Executive Officer - Deaf Australia

Mary Koutzamanis – Advocacy, Policy and Research Manager – Deaf Connect

Sam Ibrahim – Research Associate – Per Capita

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National Accreditation Authority for Translators and Interpreters

Expression Australia

Introduction

There is a significant evidence base that has been established over many decades, exploring the impact of language on cognitive development, and the role of early intervention. This evidence base serves as the impetus for this research project. The analysis presented seeks to survey the literature, and outline the established literature, serving as a precis to the research on early intervention. The research considers the evidence base pertaining to Auslan (and sign languages more broadly) as an early intervention approach for deaf children while also considering the extant research on bilingual and bicultural approaches to early intervention. Employing estimates deriving from the research exploring the impacts of deafness, the report offers a series of estimates of the costs of delaying intervention.

There is ample evidence supporting the notion that oral-aural and visual-gestural modalities of language and communication 'nourish the brain's language mechanism' (Hall 2017). This assertion is critical to the acknowledged benefits of sign language as an early intervention approach. Each modality of language, oral and signed, is enriching and facilitates language acquisition. It is a common misconception that one or the other is detrimental to cognition, which is not supported by the evidence base. This report does not therefore adopt an 'either-or' view of using signed and oral approaches, given the apparent benefits of each. The report focuses on the benefits of Auslan early intervention for deaf and hard of hearing (DHH) children, even when oral-aural skills are also being developed.

Humphries et al. (2014) assert that it is frequently the case that "language" and "speech" are used interchangeably by policy makers and researchers. This usage reflects a fundamental misunderstanding about the nature of language. Language is rich and diverse, and sign language is a distinct form of language and modality of communication.

The Deaf community is diverse with several communication methods used. Some members of the community are bimodal bilingual, with fluency in both Auslan and spoken and/or written English. Others use primarily Auslan and may have limited fluency in English. Some may continue to use educational communication systems such as Signed English (Ozolins and Bridge 1999). It is important to note that, for Deaf people, fluency in English does not necessarily mean that they can understand spoken English. Nonetheless the community shares a common association with Deaf culture. Auslan is the language of the Deaf community, and a defining aspect of Deaf culture.

The benefits of early intervention are not merely in respect to cognitive development and academic attainment. Many parents are choosing sign language as a modality of language for their deaf children because of the social and cultural benefits

associated with Auslan usage. The highly supportive and community-oriented nature of the Auslan community within Australia is a source of immense social capital and engagement for many.

A brief history of Auslan usage

In the 19th century, British, Irish and Scottish people who were deaf migrated to Australia and brought their sign languages with them. Over time, an Australian sign language developed its own unique characteristics. Like any other living language, Auslan continues to evolve over time to meet the communication needs of the Deaf community.

Auslan emerged within dedicated "schools for the deaf" and became the preferred mode of communication for the Australian Deaf community. The term Auslan was coined in the late 20th century by linguist Trevor Johnston (Johnston & Schembri, 2007).

It possesses a grammar and sentence construction approach that is distinct from English, and its sign lexicon is also somewhat differentiated from antecedent sign languages. While Auslan is best understood as a language coming from the BANZSL family of sign languages, it continues to change and draws from other sign language dialects. Its origins lie in 19th century migratory patterns and like any other language it has evolved over time with lexicon expansions adding richness to the language.

Auslan draws from many different lexicons, and many modern expressions used by young people draw from ASL (American Sign Language). As Auslan emerged as the language of the Deaf community, so too did the research program driven by the Deaf community, evidencing the best models of intervention for young deaf learners. The benefits of Auslan are in part linked to the timing of intervention.

The benefits of early intervention

Understanding the benefits of early intervention requires an understanding of the challenges that may arise in the absence of such intervention. The following segment of the report outlines early intervention concepts and practices broadly, and the role of early language intervention, with a specific focus on sign language based early intervention.

What is early intervention?

Early intervention is the process of offering appropriate support to children and young people that are identified as being at high risk of adverse outcomes absent of such intervention. Identification of high-risk children and young people is paramount to effective intervention (Yoshinaga-Itano 1999, Gale, 2019).

The primary purpose of early intervention is to prevent problems from occurring, and not to wait for them to arise. Where problems arise, respond as expediently as possible. In the case of deafness, the absence of early intervention may result in forgone developmental benefits, and result in visual processing of language information rather than language region processing of signed

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language³ (a less efficient means of processing sign language), and in the medium term, give rise to adverse psycho-social impacts. This developmental variation will occur regardless of the language that is being acquired and is therefore not isolated to the signing modality but pertains to all language acquisition.⁴ Early intervention also seeks to promote self-efficacy and foster the requisite skills and capabilities for successful and independent lives.

The implementation of early intervention is often varied, and there is no singular approach to any type of intervention. Intervention is often tailored to the needs of the individual and their potential risks. Examples of methods employed in early intervention include school-based program delivery, peer or adult mentoring, engagement sessions, and programs delivered using technology to improve beneficiary skill sets.

Within different risk categories different interventions are necessary. Considering a hypothetical category of risk, entirely separate to our focus, for example involving a hearing individual at risk of criminality, a program of mentoring may be considered an appropriate early intervention. For a child with autism early intervention may involve home visitation to support skill development that includes training for parents to support them in caring for their child. A child that is deaf may benefit from early Auslan exposure and learning in their home and school settings. They will benefit from exposure to deaf peers and Deaf culture. They may also benefit from hearing aids or implantation depending on the nature of their deafness, and associated oral strategies, or some combination of strategies reflecting a bimodal bilingual approach.

The nature of the risks faced by the child will determine the type of intervention and the impact of timing of intervention. There is strong evidence suggesting that early intervention is best within most risk categories however with some categories of risk and vulnerability later interventions may still provide significant and comparable benefits to the child. For example, a child at risk of criminality may benefit from later life mentoring, beyond their early youth. But some risks are time dependent, and necessitate earlystage intervention, particularly those risks that are associated with cognitive, physical, or psycho-social development. This appears to be the case with the risks associated with language acquisition that appear to necessitate early term intervention, potentially within the first five years.

Early language intervention for a deaf child may involve exposure to Auslan education, oral-aural skills, community, and Deaf culture. Early intervention may alleviate and reduce the risk of language deprivation and the associated condition, language deprivation syndrome. Early Auslan exposure ensures first language acquisition and is associated with cognitive and developmental benefits. While acknowledging that other early intervention strategies exist, our focus herein is specifically on Auslan/sign language based early intervention strategies and their impact on deaf children.

How does early intervention generally work?

There are several different approaches to the administration and delivery of early intervention reflective of different national perspectives and cultural differences. They all seek to identify and reduce the factors that are drivers of risks and maximise the number and extent of protective factors within the life of the child.

The factors that impact a child's life negatively are well understood and well established in research. These factors also interact in complex ways, making no two experiences identical. Failure to identify individuals evidencing high risks increases the likelihood of mental and physical health problems, criminal involvement, substance misuse, or exploitation or abuse in later life.

Factors impacting development, learning, physical and mental health, and engagement with the community differ for each child, and vary at personal, family, community, state and societal levels. There are protective factors that exist and emerge to protect, support, equip and nurture children. But they do not emerge within every child's situation, or they emerge to a differential level. Examples include socio-economic status, parental mental health, quality of schooling, broad familial support, and nurturing social environments proximate to the child, and available to the child. In the context of deafness, the critical moderating factor is access to language, language and developmental progress, and the impact of programs that redress language deprivation.

With many risk categories factors are largely not deterministic at an individual level, however evidence suggests that with deaf children, access to language and first language acquisition are key determinants of future outcomes, both academically and more broadly.

Early intervention strategies involving deaf children involve parental decisions pertaining to the use of varied intervention strategies, such as the use of oral strategies, sign language, or bimodal bilingual approaches, or implantation when implantation is plausible. The choices faced by parents are impacted by their own knowledge or lack thereof pertaining to Deaf culture, the extent of the child's deafness, and their community network.⁵

The challenges faced by parents are difficult to navigate, and often a source of immense stress. Options are often presented in a diametrically opposed manner (Humphries et al 2014, Hall, 2017), as a false dichotomy, and this makes the decision faced by parents all the more challenging. Ching et al (2018) explore this decision process conducting a series of interviews with parents identifying a series of key themes "(1) parents draw on a variety

³ There are established patterns for access and processing language. In sign language as with spoken language the Broca's area is activated, while processing sign language as with spoken language employs Wernicke's area, consistent with spoken language.

⁴ For a general introduction to these issues see Suri, Sana. "What sign language teaches us about the brain". The Conversation.

⁵ Added complexity arises from the many parties that engage with the decision process that may have divergent views pertaining to appropriate intervention, and the plausibility of multiple concurrent interventions, often described as bi-cultural and bi-modal approaches. There are a number of medical and allied health professionals that are parties to the decision process, including audiologists, hearing health professionals. Our discussion with reference group members indicates that many of these allied professionals may be unaware or not engaged with the Deaf culture. It is imperative that relevant stakeholders possess adequate knowledge of the benefits of Auslan as an intervention, in addition to a viable knowledge of the role of Auslan in bi-cultural, bi-modal interventions.

of experiences and information to make decisions; (2) parents' preferred outcomes for their children drive their choices; (3) child's preference and proficiency drive parental choice; and (4) parents' fears and worries influence decisions. The results reinforced the importance of parents receiving unbiased, descriptive information as well as evaluative information from professionals, so that they could consider all options in making a decision that met their needs."

Equally challenging is the process of moderating progress and the decision to change a communication method. Where a decision has been made, parents may be fearful of change. Given the stark presentation of choices, the decision to change or include a new method may be a highly stressful one. Scarini (2018) conducted a thematic analysis of the decision factors influencing changes in communication method identifying five key themes influencing parental/caregiver decisions, "(1) family characteristics; (2) family access to information; (3) family strengths; (4) family beliefs; and (5) family-centered practice. The overall finding that the family unit is at the core of decision-making has important clinical implications regarding early intervention professionals' provision of family-centered services when working with the families of children with hearing loss".

Overall, the decisions pertaining to early language acquisition, modalities of intervention and any potential change in intervention strategy present parents with an incredibly stressful and confusing set of choices. Understanding the implications of these decisions is critical for parents and policy makers alike. The decision to defer potentially viable interventions appears to have consequences well beyond childhood.

Exploring the benefits of early sign language intervention

It is important to acknowledge that language fluency and early exposure to language afford benefits to users of language beyond communication alone. Sign language, like all living languages, provides users with benefits to cognition and development that further enable and support better educational access and learning outcomes. Knowledge of and exposure to Deaf culture are also supported and positively associated with Auslan knowledge and early exposure to Auslan moderates native language capability. The benefits of cultural membership have not been accounted for sufficiently when considering the benefits of early intervention. These two broad benefits categories are the focus of the current report, with consideration given to secondary benefits that derive from these two primary benefits categories, most notably, educational attainment and mental health outcomes.

Figure 1 – The benefits of early intervention

Culture and identity Self efficacy Mental health **Cognitive and developmental benefits**

The benefits of sign language to cognitive development are apparent within the significant body of literature exploring the impact of sign language on early childhood development. As noted in the preliminary discussion, it is important to recognise that sign language as with aural-oral languages is enriching and developmentally valuable. It evidences all the same cognitive benefits as spoken languages. The timing of intervention remains critical given the nature of first language learning and language development. There is a significant evidence base supporting the assertion that language acquisition during the first five years is most critical for native language acquisition.

Concerningly, sign language is often presented as the last choice or as part of a false dichotomy with oral language, whereby parents are often made to feel as though they must choose between one strategy or the other (Humphries et al. 2014). This presentation is contrary to the existing research exploring language and cognition.

Humphries et al. (2014) notes that parents are often told that the best way for their child to acquire spoken language is to raise them without sign language. In many cases, parents are advised by medical professionals with minimal knowledge and understanding of sign language and Deaf culture that sign is to be chosen only as a last resort (Petitto 1998, Johnston 2006), and that great effort should be devoted instead to the acquisition of speech. Given that these parents are hearing and unfamiliar with deaf people's lives and sign languages, many opt for the more typical oral and/or aural choice (speech and audition only).

This false dichotomy presentation of the decision framework faced by parents may result in many young deaf children not being afforded the benefits of sign language or only being given access to sign language when other methods have been unsuccessful (when it is often too late to receive the full benefits). The benefits remain compelling, however with the introduction of Auslan being associated with improved language and communication development across both signed and spoken languages, pointing to potential to support cognition, social and emotional development (Wong et al, 2018).

While cochlear implantation offers immense benefits to many receiving implantation (Blamey and Sarant 2003; Blamey et al., 2001; Preisler et al., 2002, Sharma et al. 2020), recipients of implantation achieve different levels of benefit. Some children are able to pursue oral/aural intervention strategies through implantation. For some children, cochlear implantation does not provide full access to spoken language (Meadow-Orlans et al., 2004). Most deaf children receiving implantation are functionally hard of hearing (Blamey, 2002; Blamey et al., 2001; Schick et al., 2006; Spencer, 2002; Spencer & Marschark, 2003). These children benefit from exposure to and assistance in learning signed language (Hall et al. 2017; Spellun & Kushalnagar, 2018). This is also the case for children with late diagnoses and/ or later age of cochlear implantation (Lyness et al. 2013). The present report does not consider the relative merits of different approaches to intervention, acknowledging the well documented benefits of both sign language and implantation, amongst other notable strategies. Rather the report focuses on the benefits of Auslan as an early intervention strategy for profoundly deaf

Exploring the Benefits of Auslan in Early Intervention Approaches for Deaf Children

children, and for those that may benefit from both oral and sign language interventions.

Understanding the benefits of Auslan usage to children that are profoundly deaf and for those children that are not able to access full spoken language is of critical importance. Notably however, all strategies appear to benefit from the earliest intervention. Critical to this discussion is the consideration of the dichotomy presentation of oral and alternative strategies. While it is well established that sign language is cognitively beneficial and not at the expense of oral/aural strategies, the highly pervasive either/or view remains. The following studies explore the cognitive benefits of sign languages in early childhood.

Neuro-plasticity and the window for early intervention

The neural plasticity underlying language learning is a process rather than a single event (Banaszkiewicz, 2021, Richardson, 2020). The language and literacy research strongly supports the notion of a critical window for first language acquisition. Language acquisition may occur at any time, but to receive the benefits associated with 'native' capability or first language capability, and complex grammatical understanding, learners benefit from early exposure to language (Mayberry et al. 2011, Humphries et al. 2014).

Humphries et al. (2011) note that "the language or languages the child acquires during these early years are called first languages. Around five years of age, the plasticity of the brain begins to gradually decrease. A child who has not acquired a language by that time (often called "the critical period") runs the risk of not acquiring native-like fluency in any language". Where a child evidences greater challenges in first language acquisition due to deafness, regardless of the extent of deafness, this interval represents a critical window for intervention (herewith critical intervention window, CIW). This critical period is important for first language acquisition for hearing children but rarely presents challenges; as language deficits generally only arise as a result of intentional neglect, or a lack of exposure to language where a child has not been around people. For deaf children, the critical intervention window represents the interval during which first language acquisition necessitates intervention.

Studies of deaf people employing scanning technology to observe activation in regions, and the plausible impacts of acquiring sign language at different times support this assertion. A study of adults in the U.S. employing ASL (for a term of 30+ years) that were exposed to ASL at different times (birth to three years, four to seven years, and eight to fourteen years), identified an "age of acquisition" effect that impacted their ability to understand grammar (Mayberry et al., 2011).

Notably, the study identified that activation occurs differently depending on the timing of ASL exposure, notwithstanding the significant term of ASL usage. Later exposure to ASL demonstrated greater activation in posterior visual brain regions, and less in anterior language brain regions when exposed to video of ASL sentences. Where individuals were exposed to ASL earlier in life the reverse was observed. This means that

the individual processed language differently depending on the initial sign language exposure term. Sign language is processed visually by those who were exposed to ASL later, rather than within the language regions of the brain. This is a less efficient means of processing language. Hall (2017) emphasises that the sign language acquisition window is not longer, citing Mayberry et al. (2011); noting that "Even after decades of language use, later exposure to ASL meant less processing in language brain regions". This is a key finding, as robust neural pathways in the language regions of the brain are essential for developing language fluency and for learning new languages across the lifespan.

The visual attention patterns of children also differ based on exposure to sign language. A longitudinal study of deaf and hearing infants, exploring sign language exposure from parents, identified that a mother's use of signed language and gesture is strongly associated with the attention patterns of the child, as well as their approach to social interaction and language progressing. A mother's use of sign language when a child is 12 months old was associated with the noted developmental progress dimensions observed in the child at 18 months old (Meadow-Orlans, Spencer, Koester, & Steinberg, 2004).⁶ These studies offer further evidence of the critical window for language acquisition.

Timing of initial intervention(s)

The identification of hearing loss at the earliest point has been identified as critical to the success of intervention with a number of studies determining that identification during infancy, then supported by a suitable intervention by the age of approximately six months makes normal language development (either spoken or signed language) a possible outcome (see inter alia Anderson, 2006; Arehart & Yoshinaga-Itano, 1999; Schick, 2003; Yoshinaga-Itano et al. 1998). In particular, Yoshinaga-Itano et al. (1998) have identified that where the child's hearing loss is identified by six months of age they have "significantly higher receptive and expressive language skills than children with later-identified hearing loss". Inge (1981) notes that "there is now considerable evidence in support of the Piagetian-Wernerian hypothesis that early language emerges out of a more general symbolic capacity, one that also includes the use of gestural symbolic schemes in play".

Yoshinaga-Itano (2006) offers the proposition that age of identification is not a direct determinant of the production of speech in children that are deaf. But it is positively associated with language development. Additionally, Yoshinaga-Itano (2005) offers the instructive conclusion that "when children are able to produce lexical and grammatical units of language, regardless of modality, they have a framework for developing spoken language articulation skills".

Conceptual development and Theory of Mind

While language exposure supports language development it is also critical to other key cognitive functions, such as those associated with Theory of Mind (ToM). Theory of mind is a representation of an individual's capacity to understand others

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⁶ Shum (2020) present findings revealing a distinct network for sign language and detail the temporal propagation supporting sign production.

by being able to presume what their mental state is. For example, one can understand the mental states, beliefs, emotions and preferences of others, understand they can be different from one's own and be able to demonstrate capability in modifying behaviour to accommodate this.

Richardson (2020) notes that "language provides a rich source of information about other people's thoughts and feelings". Consequently, delayed access to language may influence an individual's capacity to understand and consequently engage with others in social interactions, as it impacts cognitive development associated with ToM.

Richardson (2020) has identified that "...neural responses to ToM stories (specifically, selectivity of the right temporo-parietal junction) in these children resembles responses previously observed in young children, who have similar linguistic experience, rather than those in age matched native-signing children, who have similar biological maturation. Early linguistic experience may facilitate ToM development, via the development of a selective brain region for ToM". This discovery is significant and further emphasises the benefits of early intervention and sign language usage to understanding others and in social interaction.

Bi-modal bilingualism, monolingualism and developmental outcomes

Since the establishment of dedicated programs of intervention for D/deaf children and the advancement of sign languages, language philosophies and education of deaf children have been caught within a seemingly intractable debate pertaining to the use of sign language or exclusive spoken language approaches where plausible (Hall 2017), and this 'either/or dilemma' has presented several challenges for parents and policymakers alike.

Research exploring the benefits of sign language within bimodal/ bicultural bilingualism, while mixed, on balance supports the assertion that bicultural bilingual approaches are cognitively and developmentally beneficial (Adesopeet al., 2010, Luk et al., 2011). This matter warrants a separate precis to the research. Nonetheless, in Per Capita's evaluation of the literature, two themes emerge, that bi-cultural approaches are developmentally beneficial, or that bicultural bi-modal approaches are developmentally neutral: neither beneficial nor detrimental to oral/ aural strategies. There is less evidence of deleterious impacts to cognition and development associated with sign language exposure.⁷ Nonetheless, Hall (2017) notes that the belief of "sign language-interference has endured despite a long-standing lack of empirical evidence that spoken language-only approaches are more effective" (see inter alia, Henner, Caldwell-Harris, Novogrodsky, & Hoffmeister, 2016; Humphries et al., 2016).

Indeed, the literature evidences immense diversity of perspectives with most favouring bilingualism. In fact, bilingualism is associated with better cognitive outcomes when compared with monolingualism (Adesope et al. 2010), especially at earlier ages of active bilingualism (Luk et al. 2011).

Recent systematic reviews and research syntheses conducted by Fitzpatrick et al. (2016) and Humphries et al. (2014) represent the dialectic debate and diversity of research perspectives well. In a review of sign language and spoken language interventions or bimodal bilingual interventions in comparison with oral interventions Fitzpatrick et al. (2016) concluded "...very limited, and hence, insufficient evidence exists to determine whether adding sign language to spoken language is more effective than spoken language intervention alone to foster [spoken] language acquisition" (Fitzpatrick et al., 2016, p. 14).

Humphries et al. (2014) in citing much of the extant empirical work offer the counter position that sign language is cognitively beneficial and bilingual learners' evidence better cognitive outcomes than monolinguals. Hall (2020) asserts that the work of Fitzpatrick et al. (2016) is fundamentally flawed noting such reviews fail "to distinguish natural sign languages from artificial communication systems, which would not enable bilingualism or language transfer (e.g., sign-supported speech or signing exact English)" (see also M. L. Hall, Caselli, & Hall, 2017). Hall (2020) also notes that the approach to many evidential reviews is somewhat flawed, essentially that "the authors approach the system review as if the "burden of evidence is in only one direction; however, if the evidence is supposedly insufficient in one direction - ipso facto, it is insufficient in the other direction and there is insufficient evidence of spoken language-only approaches being more effective" (Hall 2020).

The influential study of Geers et al. 2017 is also noteworthy. The study of children receiving implantation and exposure to sign language asserted that the speech of children not exposed to sign language was more intelligible than that of children exposed to sign language. The study claimed more age-appropriate progress in reading and spoken language for non-sign language users. However, the study appeared to lack essential controls and specification challenges. For example, the work of Hall et al. (2017) offers the following important critique of Geers et al. 2017. Hall et al. (2017) assert that "the authors used an unconventional, ambiguous, and arguably misleading definition of 'sign language' that did not differentiate naturally evolved sign languages (in this case, American Sign Language) from other manual communication systems, which are not natural languages but artificially constructed methods of communicating in English (e.g., sign-supported speech, manually coded English). These artificial systems offer limited information in the visual modality and are not intended to promote the acquisition of a signed language. There is no reason to believe that children would learn a sign language through these systems. While this may reflect how families who use 'sign language' actually communicate, calling these systems 'sign language' creates a straw man that naïve readers may assume to refer to natural sign languages. We are not aware of anyone who would argue that such communication systems confer the same benefits of a natural sign language."

The results of Geers et al. 2017, may be consequential to misspecification. Critically, the work of Geers et al. (2017), as noted by Hall et al. (2017) does not control for intervention timing or the 'mastery of sign language'. Therein, learners may not have had access to timely intervention, or quality sign language training. These findings are also contrary to many studies evidencing

⁷ For the notable critiques see Geers et al (2017) and for a response to Geers et al (2017) see Hall (2017).

stronger academic performance where fluent sign language was a provided intervention (see Humphries et al. (2014) for a precis).

Additionally, research conducted by Dammeyer et al. (2018) evidences the desire of many hard of hearing students and students receiving cochlear implantation to know more sign language (41.5%).

On the weight of presented evidence, we favour the postulate that sign language has either a favourable or neutral impact on bilingual learners, and do not support the 'language interference' contention. We favour the views presented by Hall (2020) and Humphries 2014 that language deprivation, through the exclusion of a fully accessible visual language such as sign language, appears to be a more likely cause of poor language outcomes in Deaf people.

Sign language as a protective factor

Arguably as important as any proposed intervention's plausible benefits is the potential for a given intervention to be unsuccessful, and the role of concurrent interventions where there is uncertainty or unevenness in the results of a given intervention.

This is the most significant benefit of sign language, its role as a core intervention or as part of a suite of interventions, as a protective factor. Where only oral-aural interventions are employed, the child is exposed to significant risk that the strategy may not be successful (see Hall 2017).

Humphries (2012) notes that "If they miss this critical period for exposure to a natural language, their subsequent development of the cognitive activities that rely on a solid first language might be underdeveloped, such as literacy, memory organization, and number manipulation. An alternative to speech-exclusive approaches to language acquisition exists in the use of sign languages such as American Sign Language (ASL), where acquiring a sign language is subject to the same time constraints of spoken language development.

It is plausible that a deaf or hard of hearing child may benefit from a diversity of strategies including aural-oral strategies. However, absent of a sound language foundation, that same child is exposed to the risk of the strategy being ineffective, and is at risk of language deprivation.

The notion of sign language as a protective factor is also supported by studies considering the role of sign language intervention timing and native language acquisition. Thompson et al. (2007), Mayberry et al. (2011), and Levine et al. (2016) consider native language acquisition and identify that sign language exposure prior to the age of five is associated with native language acquisition. The research evidences the role of sign language as a protection against language deprivation.

This notion of protective benefit is also strongly supported by Yoshinaga-Itano (2005 & 2006), as noted earlier in the report, the studies identify that while not directly determined by age of identification language development is strongly and positively correlated to intervention timing. Additionally, regardless of modality, when children are able to produce grammatical and lexical units of language, they possess a framework for the development of language articulation skills (Yoshinaga-Itano,2005). This evidences the strong protective benefits of sign language, whereby sign language provides a foundation for lexical and grammatical understanding and for critical early communication, the early development essential to future learning pertaining to language and beyond.

Auslan, as part of an intervention strategy ensures that deaf children are provided with a viable modality for speech, and the necessary language foundation to progress developmentally. Sign language is therefore intrinsically valuable because of its inherent benefits and its role as a source of protection, against language deprivation and the potential ineffectiveness of other strategies. Where a child benefits from alternative interventions, they are exposed to Auslan daily and have been exposed to native Auslan users, they benefit from bilingualism; where another concurrent strategy has not yielded the benefits that were hoped for in written and spoken English, Auslan has provided the child with a foundation of language without the ensuing benefits of a naturally developing language along expected lines.

As noted within our earlier report "The economic benefits of Auslan", the benefits of Auslan in supporting capability enhancement and as a protective factor in the life of the child are not considered in great detail within the literature, but there remains a significant body of literature advancing this contention in the broader sign language literature. The evidence base pertaining to sign languages more generally, strongly supports the assertion that sign languages are a critical protective factor in the life of a deaf child.

Key finding:

There is a critical window for first language acquisition, during which language acquisition is strongest. Failure to facilitate intervention during this intervention window, appears to be associated with atypical neural language processing, and poorer cognitive and developmental outcomes.

Key finding:

Non-native and first language acquisition may not be achievable where intervention does not occur within the critical intervention window.

Key finding:

The critical period for language acquisition appears to be the same for both modalities of communication, oral and signed.

Key finding:

Sign Language processing capabilities and sign language grammatical understanding procured over long term does not appear to fully overcome differences in initial sign language exposure terms. While many deficiencies may be overcome with time, there remain specific language capability deficiencies that may not be overcome where early exposure has not occurred.

Key finding:

Early sign language usage is associated with better cognitive and developmental outcomes in both deaf children who have received implantation and in those who have not. Bimodal bilingualism is associated with better developmental outcomes than monolingualism.

Key finding:

The evidence base supports the conclusion that sign language provides benefits to cognitive development and learning processes that are broadly consistent with the benefits of oral modalities of communication.

Key finding:

There is no evidence that sign language has any deleterious impacts on the cognitive development of learners employing a bi-cultural bi-modal approach to their learning. Sign language may result in better educational outcomes for bicultural, bi-modal learners than deaf children employing oral strategies in isolation.

Key finding:

Sign language is a harm minimisation mechanism ensuring that, alternative interventions notwithstanding, users are able to establish a viable language foundation, that protects the user from potential dysfluency, and the potential that alternative interventions may be ineffective. Bi-modal bilingualism and sign language access must therefore be considered as appropriate.

Educational benefits

Sign language research evidences a strong association between sign language intervention timing and educational outcomes and attainment. This association may be persistent in later years with several recent studies presenting evidence of the impact of sign language capability on vocational outcomes in later life (Dammeyer et al. 2018). Many of the benefits to education derive specifically from the cognitive development benefits of Auslan in early education. Among the sign language users who were identified with deafness at a very early age (that is, those who develop natural language skills in sign language) demonstrate a higher level of educational attainment. (Dammeyer et al. 2018). In the US sample, male gender and better sign language skills were associated with having a job (lbid, 2018).

A study of sign language users and vocational outcomes conducted in the US determined that sign language capability was the strongest determinant of vocational success and employment status (Dammeyer et al 2018). Early language intervention and exposure to sign language is a strong determinant of language capability, and native or first language capability. The study findings supported the assertion that early intervention supports better vocational outcomes and employment as a consequence of improved language capability

Social and Communal benefits

Among parents of children who are deaf or hard of hearing, there remains a significant level of interest in sign language learning (Kecman, 2019; Ching et al., 2018). For some children, cochlear implantation does not provide full access to spoken language and these children benefit from exposure to and assistance in learning a signed language (Hall et al. 2017; Spellun & Kushalnagar, 2018); this is also the case for children with late diagnoses and/or later age of cochlear implantation (Lyness et al. 2013).

However, some parents have chosen bilingualism to support not only language development and learning, but also social identity and inclusion (Kecman, 2019). This choice aligns with the view of Deafness as a cultural and linguistic identity (Chijioke, 2008; McIlroy & Storbeck, 2011; Young, 1999; Riddell & Watson, 2003).

The introduction of Auslan is associated with improved language and communication development across both signed and spoken languages, pointing to potential to support cognition, social and emotional development (Wong et al., 2018). Positive parental reports further supported this notion. These findings suggest that a bi-modal bi-lingual approach in early intervention may alleviate the risk of language deprivation and associated adverse impacts on cognition and psychosocial wellbeing. Research regarding the psychosocial benefits of bimodal bilingualism in early intervention programs is evident within Deaf Studies literature.

Preisler (1997) identified that hard of hearing children possessed less knowledge of the social rules of communication, such as taking turns when communicating and making eye contact. Engagement with the Deaf community may alleviate some of these challenges and address these knowledge gaps by facilitating communication between Deaf peers.

Research conducted by Antia & Kreimeyer (2010) observed that deaf and hard of hearing students interacted less with their hearing peers, and their time in each interaction was also shorter than their hearing peers. They also spent less time in interaction overall. It is therefore predictable that access and engagement with the Deaf community provides deaf children with significant socialisation benefits and encourages greater and more frequent peer to peer interaction. These interactions may alleviate the impact of some of the interaction deficits that occur with their hearing peers and provide benefits to confidence and self-efficacy.

Recalling the earlier evidence of the role of sign language in a child's Theory of Mind it is instructive to note that this aspect of sign language acquisition is critical to the child's engagement with their peers (Lecce et al, 2014, Ronchi et al, 2020) from both the Deaf and hearing communities. Beyond enabling communication, the ability for Auslan to support cognitive development as it pertains to a child's Theory of Mind enhances the child's ability to surmise and formulate views pertaining to others.

Key finding:

Auslan early intervention aligns with the desire to provide children with a strong sense of identity and self-efficacy and perceives intervention as capability enhancing rather than pure response to disability.

Exploring the Benefits of Auslan in Early Intervention Approaches for Deaf Children

Key finding:

Key finding: Sign language usage appears to be positively associated with children's emotional development, and their capacity to engage and relate to others, specifically the child's Theory of Mind

Mental and Physical Health

The benefits associated with early language intervention and Auslan usage are diverse and there is a plausible multiplicative effect associated with each category of intervention benefit (social engagement, education and community participation) that is greater than each in isolation. These benefits are significant and are also associated with broader benefits to physical and mental wellbeing. Membership to a community is a source of personal utility and also provides wellbeing benefits. A sign language user is able to engage with the cultural aspects of sign language usage, a shared sense of identity and a common association.

It is important to acknowledge that there remains a dearth of research exploring adolescent and youth mental health within the D/deaf community. While research has identified that deaf adolescents typically have more mental health challenges than their hearing peers, recent research indicates this may be due to familial communication mismatches in part. Similarly, there is mixed evidence pertaining to the deaf youth cohorts, and the benefits of sign language versus spoken language within deaf youth cohorts. Some research supports the assertion that deaf spoken language adolescents experience better mental health than sign language users. However, there is a significant evidence base supporting the benefits of sign language for identity, cultural association and community engagement, it is notable that all these factors are correlates of better mental health (for a worthwhile precis on culture and mental health generally see Fernando, 2010).

Similarly, the cultural aspect of sign language usage is often not considered sufficiently within the existing research. Understanding these aspects is critical to offering an accurate account of differential mental health experiences of deaf youth. Similarly, the moderating role of peer matched communication and familial matched communication, essentially access to signing peers and family members remains underexplored. Recent research evidences the potential impact of familial communication matching on youth mental health.

The most notable challenge within the literature is the absence of exploration of the role of early intervention in mental health outcomes. It is perhaps self-evident that first language acquisition and signing capability may play a critical role in mental health, however most studies explore cohort differences without accounting for the timing of sign language intervention, and peer/ educator/familial communication matching. What is apparent in engagement with representatives of the signing community is the significant benefit that they assert derives from Deaf culture, with Auslan critical to the existence and establishment of the culture. Critically, Per Capita's appraisal of the literature indicates that longitudinal analysis of the experiences of individuals choosing early intervention, versus those delaying intervention, is essential to formulating a more definitive position pertaining to the role of not just sign language, but early intervention on the mental health of D/deaf children at different life stages. Presently the limited research exploring youth mental health and the role of early versus later intervention makes drawing definitive conclusions challenging.

Early intervention is strongly associated with better learning outcomes, greater self-efficacy, and better first language acquisition: all strong correlates of wellbeing and better mental health (Glickman et al. 2020, Hall, 2017).

What is also evident is the potential impact of language deprivation (and the potential emergence of language deprivation syndrome) on mental health, self-efficacy and self-determination of members of the Deaf community. Later language intervention is logically associated with language deprivation, and results in individuals not accessing sign language 'natively' if intervention occurs after an individual is approximately five years old. Later intervention, coupled with limited opportunities for engagement, will result in more culturally marginal and language dysfluent people, who are more likely to evidence poorer mental health outcomes.

People who have experienced severe language deprivation comprise a minority of people seen in Deaf mental health programs, though they may require a grossly disproportionate allocation of resources to serve (Glickman et al. 2020). Deaf people that evidence language deprivation may also face severe health service access challenges. As noted by Glickman et al. (2020) "...what makes language deprivation a game-changer for the Deaf mental health field, however, is that providers will increasingly work with such culturally marginal, language-dysfluent people. This calls for a greatly expanded toolbox drawing upon both cultural and disability frameworks, including research into all the implications of late and inadequate language exposure"

Access challenges may be consequential to the combination of co-morbidities presented by deaf children and adults. Older Deaf or hard of hearing adults frequently present with other comorbidities making collaborative care and accessing appropriately tailored care challenging. In Dupis (2019), the frequency of identification of co-morbidities with audiological disability was 68% for visual, 50% for cognitive, and 42% for manual dexterity issues; 84% had more than one comorbidity. The frequency of co-morbidities may make it more challenging for older adults to identify a single source of care, with this deemed highly beneficial to achieving better health and care access outcomes. Earlier intervention and the sign language capability of individuals promote better health access outcomes by reducing the likelihood of language deprivation and promoting self-efficacy. Early intervention involving Auslan exposure may also assist deaf children who evidence co-morbidities, and deaf adults who benefit from early intervention if multiple morbidities are present as they age.

Self-expression is increasingly challenging for deaf children and adults with comorbidities that may impact their capacity to communicate needs, and express concerns to providers of health services. The emergence of co-morbidities or existing comorbidities may result in a decline in self-efficacy. This declining self-efficacy causes older deaf adults to be at a disadvantage when accessing services. Challenges associated with selfexpression may result in self-exclusion, whereby older deaf adults choose to forgo care services because of the stress they feel in accessing services. Self-exclusion is however not a unique challenge impacting only elderly members of the Deaf community, with young people plausibly impacted by lower self-efficacy and a desire to self-exclude.

Consequently, there remains a dearth of life course studies exploring cohort specific challenges and mental health divergences within the Deaf community, that specifically account for communication matching, the timing of intervention and familial environment. However, the language deprivation research is highly instructive.

Where early intervention is seen as a moderating factor of language deprivation, early intervention is likely to promote cultural identity and association (reduce cultural marginalisation) and improve language capability, improving mental health outcomes and self-efficacy.

Early intervention aligns to a more modern and culturally safe mental health paradigm, yet supporting strong self-advocacy, efficacy and representation at the earliest stages of a child's engagement with services and civic systems. This approach is aligned with what Glickman et al. (2021) assert is the third paradigm of deaf mental health service.⁸

This mental health paradigm shift has been acknowledged as the culturally affirming model of care (Glickman et al. 2020, Glickman & Gulati, 2003; Glickman & Harvey, 1996; Leigh, 2010). Early intervention is culturally affirming, and is associated with lower potential language dysfluency, reducing the likelihood that the deaf person will necessitate elevated levels of care and increasing the likelihood that they will be able to advocate for their own needs.

Key finding:

Language deprivation is associated with poorer mental health outcomes. Early intervention and the earliest timing of intervention impact language deprivation.

Key finding:

Early intervention aligns with a culturally affirmative model of mental health care that acknowledges the Deaf culture.



8 Glickman et al 2020 describe paradigm three as Deaf Mental Health service with the Integration of Culture and Disability Considerations.

Overview of the key benefits of early intervention

The following table summarises the key findings of the report and the associated literature, noting supporting research as well as any neutral and refuting findings of note. The summary is nonexhaustive and intends to outline the studies maintaining each position regarding the noted benefit, in each instance.

Benefit	Supporting	Neutral	Refuting
Sign language supports cognitive development	Hall (2017) Humphries et al. (2014) Spellun & Kushalnagar (2018) Adesope et al. (2010) Luk et al. (2011)		
Infants (<6 months) are able to learn sign language	Thompson et al. (2007) Mayberry et al. (2011)		
Sign language usage during infancy (<12 months) yields significant language acquisition benefits	Thompson et al (2007) Mayberry et al. (2011) Levine et al., (2016)		
Consistent language usage and exposure is required prior to five years of age to support native proficiency	(5) Thompson et al. (2007)(5) Mayberry et al. (2011)(5) Levine et al. (2016)		
Sign language capability is associated with better vocational outcomes amongst deaf persons	(6) Dammeyer et al. (2018)		
Sign language usage is not a source of language deficiency in second language acquisition in children	Hall (2017) Humphries et al. (2014) Spellun & Kushalnagar (2018) Adesope et al. (2010) Luk et al. (2011) L. Hall et al. (2017) (3) Padden & Ramsey (2000) (3) Strong & Prinz (2000) (3) Mayer & Akamatsu (2003) (3) Paul (2003) (3) Schick (2003) (3) Allen et al. (2007) (3) Wilbur (2008)	Fitzpatrick et al. (2016)	Geers et al. (2017)
Sign language usage is associated with better learning outcomes in bi- modal bi-lingual learners	 (2) Bunta et al. (2016) (2) Guiberson, (2014) Hall (2017) Desselle (1994) (4) Klatter-Folmer et al. (2006) (7) Cummins & Gulustan (1974) (7) Prinz & Strong (1998) (7) Bialystok et al. (2004) (7) Baker (2006) (7) Lightbown & Spada (2006) (7) Bialystok et al. (2007) (7) Kushalnagar et al. (2010) 	 (2) Bunta & Douglas, (2013) (2) Francis & Ho, (2003) (2) McConkey Robbins et al. (2004) (2) Green, & Waltzman, (2004) (2) Sininger et al., (2010) (2) Thomas et al., (2008) (2) Waltzman et al., (2005) Kampfe & Turecheck, (1987) Mapp and Hudson (1997) 	 (1) Deriaz et al., (2014) (1) Kiese-Himmel, (2008) (2) Boons et al., (2012) (2) Forli et al., (2018) (2) Teschendorf et al., (2011)

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Benefit	Supporting	Neutral	Refuting
Native language acquisition is associated with earlier	Doidge 2007 Cam & Newport 2007		
language exposure/ intervention	Woods & Carey 1979 Martins 2004 Mayberry 1994, 1998, Hall & Johnston 2009,		
	Hudson & Newport 2009		
Better language and developmental outcomes are associated with early intervention/exposure	Mayberry & Fischer 1989, Emmorey & Corina 1990, Newport 1990, Emmorey 1991, Mayberry & Eichen 1991, Wood 2007, 2011 Johnson & Newport, 1989; Baker et al. 2006; Palmer et al. 2012		

Source: PerCapita 2022. (1) Vocabulary only studies. (2) Language acquisition outcomes only. (3) Studies of Sign language user school performance controlling for confounding factors. (4) Syntax complexity studies. (5) Early intervention studies. (6) Limited number of studies/estimates. (7) Studies exploring creative, problem solving, flexibility with persistence into childhood.

There remains significant evidence of the benefits of early intervention, and the role that sign language plays in early intervention strategies. The evidence base largely supports the assertion that sign language is cognitively beneficial, with only modest evidence supporting the counter position. Similarly, early intervention is asserted to be associated with better sign language outcomes, and better academic outcomes within the extant body of research. There is little evidence of sign language having any detrimental effects on oral language acquisition, with the evidence base supporting bicultural bimodal interventions where plausible. Regarding mental health, the research remains somewhat inconclusive with evidence that cultural identity within the Deaf community is valued and may be associated with positive health indicators, but also evidence of significantly poorer mental health outcomes within the D/deaf community.

There is growing concern among researchers that current early-intervention programs do not provide a well-informed or adequate range of options for parents and deaf children (Anderson, 2006; Arehart & Yoshinaga-Itano, 1999; Sass-Lehrer & Bodner-Johnson, 2003).

The lifelong consequences of language deprivation are too farreaching, from early childhood to adulthood, to limit a deaf child's time-sensitive language acquisition opportunities. Rather than focusing on auditory deprivation and speech skills, developmental approaches for deaf children should prioritise healthy, expected development of all developmental domains (e.g., cognitive, academic, socioemotional) that comes with the guaranteed full acquisition of a fully accessible first-language language foundation such as sign language.

Quantifying the benefits of early intervention

Establishing the economic benefits of early intervention is challenging given the dearth of studies exploring the impact of early intervention in the long term. Studies establish that language deficits may not be redressed fully even after significant terms of sign language usage, and language deficits arising early in life with subsequent language exposure impact how language is processed by the brain.

Establishing the benefits of early intervention necessitates determining the impact of deafness absent of early intervention. Viewing deafness through a disability lens may be somewhat unhelpful given the existence of Deaf culture, and the utility and amenity provided by sign language. However, Health Adjusted Life Year (HALY) methodologies provide a mechanism for the determination of early intervention benefits estimation.

Employing disability weights deriving from the Global Burden of Disease study (2019) and Value of Statistical Life (VASL) estimates, we are able to establish an estimated cost of deafness. These cost estimates may then be adjusted to account for the capability enabling and cognitive benefits of early intervention that are counter to the disability impacts. Critical to the estimates is the impact of Auslan on capabilities, the research assumes that Auslan is capability enabling, supporting self-efficacy and social, economic and cultural engagement, attenuating the impact of disability.

Absent of access to an accessible language (with sign language being the most accessible), deaf persons face significant and deleterious language deprivation, that is associated with poorer health and wellbeing outcomes. Language deprivation is significant because individuals evidencing deprivation require more significant social and economic supports (Hall, 2017).

Language deprivation is also associated with higher rates of depression and anxiety and is likely to exacerbate the impact of disability (Evidence of this is presented in Glickman et al. 2021, Glickman and Pollard Jr 2012). In Glickman et al. the authors note the emergence of deaf mental health patients that are increasingly culturally dysfluent and language deprived, facing greater difficulty in accessing and benefiting from mental health care. Additionally, the frequency of co-morbid conditions and the impact of culturally unsuitable services for deaf persons makes it highly predictable that the dearth of culturally viable services would exacerbate co-morbid conditions, as deaf persons find it harder to access suitable services). While sign language may be learnt after the critical period, where intervention does not occur during the critical intervention window, there may be enduring language deficits.

For conservatism we employ a constant level of diminished benefit approach, noting that deleterious cognitive impacts may arise far more rapidly, meaning that shorter differences in intervention terms are likely to have a greater impact than suggested by the modelling, particularly earlier. This approach however was critical for conservatism in the absence of life course data. A complete methodological note is included in the appendices. For clarity the estimates presented are opportunity costs, the opportunity cost of delaying intervention for a defined term.

The lifetime opportunity cost of delaying early Auslan intervention by two years from age five to age seven is \$128,245, employing a DALY approach, and assuming a fractional reduction⁹ in Auslan benefits. This estimate account for a diminution in wellbeing, employment outcomes benefits, educational attainment or health literacy.¹⁰ This estimate is based on an 18-year model, where the decline in intervention timing is assumed to be at a constant level annually over this term. To analyse the estimate sensitivity, we apply a less conservative assumption, a 13-year decline model. This approach assumes that the level decline in economic benefit is more rapid, aligned to the concept that the impact of language deprivation is more rapid and occurs earlier.

Under this assumption the opportunity cost of delayed intervention from age five to 7 is \$171,474,¹¹ though again deficits may occur more rapidly.

Considering now the earliest intervention timing versus intervention in year five, essentially within the first year of life rather than at the time of school commencement; the total economic benefit is between \$273,782 (18-year model) and \$367,445 (13-year model).

In addition to exploring the costs of delayed intervention we also explore the extent of learning deficits caused by delayed intervention for a child aged 10 where intervention is delayed by two years from five to seven. The average learning deficit of a child aged 10, having their intervention delayed for a term of two years is approximately 20%. Therein, a child with a delayed intervention term (two years delayed) evidences a knowledge deficit of approximately 20% by age 10 in comparison to peers absent of early intervention. This learning deficit is a significant opportunity cost.

The need for a longitudinal exploration of lifetime benefits of Auslan

While the research surveyed strongly supports the assertion that early intervention is welfare enhancing, through its benefits to education, social engagement and general wellbeing, there remains a dearth of Australian research exploring these benefits longitudinally. There is immense benefit in exploring learner experiences through time. There is an absence of Australian life course studies involving members of the D/deaf community. Exploring the implications of oral/aural interventions as well as interventions involving early exposure and engagement with Auslan would be instructive to policy formulation.

As noted by Glickman et al. (2020) the emergence of language deprivation and increasingly culturally disconnected and language dysfluent¹² people, necessitates greater research focus. Glickman et al. 2020 calls for "a greatly expanded toolbox drawing upon both cultural and disability frameworks, including research into all the implications of late and inadequate language exposure". The work of Glickman et al. (2020) and Gulati (2019) has provided a sound evidence base and launching point to "acquire a science-informed consensus as to an operational definition and diagnostic criteria for Language Deprivation" (Glickman et al. 2020).

Initiating a research program involving cohorts of individuals that have engaged in different early-stage decisions pertaining to sign language exposure and capturing data pertaining to their experiences at different critical junctures shall inform decision processes and policy formation. This would support better learning and developmental outcomes for deaf children and support the Deaf community more broadly, while supporting more effective social investment.

Conclusions

The implications of language deprivation extend well beyond the critical period for language acquisition. The role of Auslan in responding to language deprivation is self-evident and understanding the role of the timing of intervention is equally pertinent. The impacts of a childhood decision extend well into adulthood, and impact individuals as they age. The implications of

⁹ Auslan intervention benefits are assumed to decline at a fixed level over an 18 year term, assuming no alternative intervention.

¹⁰ These estimates do not account for the efficacy or viability of alternative interventions, there the estimate assumes either the application of Auslan intervention or the absence of early intervention.

¹¹ This estimate is in nominal aggregate terms, the estimate assumes a constant level of decline in benefits over a 13 year term. The estimate only accounts for Auslan intervention and does not consider the impact of alternative intervention types.

¹² The notion of language dysfluent refers to low language ability, specifically poor sign language capability.

delay are too consequential to "limit a deaf child's time-sensitive language acquisition opportunities" (Hall 2017). Employing an auditory lens in evaluating a child's capabilities may be a hindrance, and while auditory capabilities and speech capabilities are not to be discounted, focusing on core developmental domains during the earliest vestiges is the most pertinent concern. Supporting the child in achieving developmental progress should not be discounted, and these benefits come with the full acquisition of a fully accessible first-language language foundation (necessary for future domain specific and general success) such as Auslan.

This does not preclude bicultural bilingual approaches to intervention, but rather acknowledges that early intervention involving sign language should not be seen as a 'last resort' measure. Cochlear implantation is an incredibly beneficial procedure for many. While cochlear implantation was and remains a life altering procedure for those able to benefit from the procedure, it does not guarantee language acquisition. Most recipients remain functionally hard of hearing. Yet many parents are presented with choices pertaining to implantation and sign language as though they are adversaries, somehow diametrically opposed. Such a presentation is unhelpful for both parent and child.

It is critical that the benefits of Auslan as an early intervention strategy are acknowledged given the benefits associated with its usage. Auslan usage does not preclude the use of additional interventions, nor does it appear based on the extant research to cause any deleterious impacts to other strategies. It is critical that the role of Auslan as an early intervention strategy given its benefits to education, self-efficacy, and cognitive development are acknowledged widely. Its capacity to connect individuals to a broader cultural identity and to access services and engage with society in a culturally affirming way represent its greatest benefits to members of the Auslan user community. While this benefit set is difficult to quantify, it is inarguably valuable to deaf people.

Language deprivation can cause cognitive delays and mental health difficulties across the lifespan. Mental health clinicians often see language deprivation and language dysfluency being a common "symptom" in deaf individuals who seek treatment and are subsequently admitted to inpatient hospitals (Black & Glickman, 2006).

The benefits of early intervention appear to be readily apparent where a child is profoundly deaf, and potentially beneficial to hard of hearing children who possess insufficient hearing capability to benefit from an exclusively oral modal of education. Bimodal bilingualism is a highly beneficial intervention for many children, and Auslan should not be presented as a last resort option given the compelling evidence supporting its role as an early intervention strategy in support of first language acquisition and cognitive development.

The critical period for language acquisition is a critical intervention window for deaf children and acknowledging the importance of the earliest plausible intervention and its lifetime benefits to the recipient is critical to developing a credible evidence-based26 approach to this issue set at a national level.



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Appendix 1 – The economic benefits of Auslan early intervention, a DALY approach

Consistent with the earlier Per Capita report titled "The economics benefits of Auslan" we employ a DALY approach to benefits estimation. Quantifying the economic benefit of a language is complex, and the literature on the economics of language emphasises this. Challenges associated with assigning value to language capital as a form of human capital are unique, as language is unlike other imbued capitals, it is something that enables all other aspects of social and economic engagement.

Auslan is the language of the Deaf community of Australia, and central to Deaf culture. However, it is a language that is distinct from English and other sign languages, notwithstanding some shared origins, as detailed within the report. Auslan users see themselves as part of a distinct cultural community, akin to other minority communities and benefit from a sense of shared belonging to this community. This shared association makes assessing the benefit of the Auslan language similar, but not the same as the valuation of minority languages, of which there is an established literature.

Critical to determining the economic benefits of Auslan is the acknowledgement that Auslan is arguably more capability enabling than other languages. The importance of capabilities is discussed broadly in literature (see inter alia Naussanbaum & Sen 1993). While the use of the word disability is unhelpful in discussions of the Deaf community, employing a disability lens to evaluate the impact of Auslan on capabilities provides a mechanism to determine the capability benefits afforded through Auslan usage.

The impact of disability on life quality has been examined within several disciplines. Examining the economic benefit of any intervention on an ability set requires the use of a quality-of-life measure. Herein we employ the methodology established by Murray (1990) and WorldBank (1993); to determine the economic benefit of Auslan, specifically a measure of lost health and wellbeing, and the associated gains from Auslan usage.

DALY impact of Auslan language usage

The use of loss of wellbeing methodology is consistent with the broader disability impact evaluation literature and has been used in studies (Li 2018, Gao 2015). The DALY methodology focuses on the non-financial costs associated with a specific category of disability. Specifically, the DALY method estimates the costs associated with premature mortality and reduced health, by adjusting total life years to account for disability, resulting in the disability adjusted life years measure. The DALYs as with the QALYs approach are both examples of methods of adjusting life years based on health, so called Health Adjusted Life Years methods (HALYs).

The use of the DALY method within evaluations of the costs of disability are replete within evaluation research, and specifically as it pertains to deafness. Emmett et al. (2016) employs the DALY method to evaluate the benefits of deaf education, with Emmett et al. (2019) employ the approach in the evaluation of deaf education within Asia. Within Australia, the methods have been employed

by AIHW (see inter alia Mathers et al. 1999), Begg (2003) and Deloitte Access (2017) amongst others. A systematic review of the use of DALY methods in the evaluation of the burdens of different categories of disability is provided by Polinder et al. (2012).

The DALY estimate comprises two components, firstly an estimate of premature mortality measured in years of life lost due to premature death (YLL) and morbidity determined by the number of years of health life lost as a consequence of disability.

Figure A1 – Disability Adjusted Life Years calculation



Estimates of YLD are determined employing disability weights, these weights derive from estimates of the impact of disability of the health of an individual. The weight is proportional to the health impact of the disability and relative to other disabilities. For the purposes of this research, we exclude the impact of comorbidities, noting that Auslan would likely be beneficial to any comorbid illness, and consequently the estimate may be seen as conservative. A disability weight of zero denotes perfect health (it is important to acknowledge that while this condition is implausible all states are relative), while a weight of 1 corresponds to the loss of life, the definition of imperfect health in the extreme.

Table A1 – Example Disability weights

Disability classifications	Disability weights
Schizophrenia	0.576
Amputation of finger	0.03
Lower back pain	0.0374

Consider the noted example weights, representing some of the variation in DW associated with various states and conditions, lower back pain carries a disability weight of 0.0374, therein, an individual with lower back pain loses 3.74% of a year of 'healthy life' due to the incidence of lower back pain. An individual with Schizophrenia loses 57.6% of a year of healthy life due to their condition. The estimates allow for the determination of the number of years of healthy life lost within specific cohorts. This is particularly instructive in policy analysis. A further benefit is the ability to translate the estimated DALY to a dollar value estimate of the cost of lost health to society. This is accomplished by employing the DALY value and the Value of statistical life. While it must be acknowledged that ascribing value to life in statistical terms is imperfect this method is frequently employed in evaluation studies. Estimate of the value of statistical life frequently employed in health and policy research; the estimate as supplied

by the Department of Prime Minister and Cabinet (2021) is \$5.1 million in total and \$222,000 per year, in 2021-dollar terms.

Estimates of DALY values and the benefits of Auslan

The initial estimates of DALY values are based on disability weights supplied by the Global Disease Burden of Disability Study (GBD 2019). To determine the benefit of Auslan, the disability weights are applied to cohort specific data to determine the extent of the disability in DALY terms. The relevant weights for consideration are noted in Table A1. Larger weights are attributable to greater levels of hearing loss.

Table A2 – Selected disability weights – GBD Study 2019

	Disability weight
Moderate	0.027
Severe	0.158
Profound	0.204

To estimate the benefit of early intervention involving Auslan to members of the Deaf community with regard to improved wellbeing, it is assumed that Auslan in its capability enhancing capacity, therein, its ability to facilitate communication, community cohesion and inclusion, would reduce the extent of the evidenced disability.

The usage of Auslan is assumed to diminish disability severity by 1 level, from profound to severe. It is assumed that the extent of diminution may be greater or smaller depending on the timing of the intervention. Absent of Auslan many Deaf people would be reliant on non-native languages such as English and transcription, tools and technologies, rather than the community's language of choice.

It is assumed that where intervention is delayed for too long significant cognitive defects may arise, in the processing of language, noting the critical period, or what we have described for deaf persons as the critical intervention window. While there is a significant body of literature emphasising the cognitive deficiency that arises after this interval for conservatism, we assume that the level of diminution in the benefits of intervention is constant, rather than assuming an exponential rate of decline or constant rate of decline, as are perhaps better supported by the literature.

The difference in the counterfactual or presumed initial level of disability and the new level of disability was determined. This difference is then applied to the SVL, to determine the average annual benefit of Auslan intervention. This intervention is deemed to occur at the age of five on average. Where intervention occurs earlier or later the benefit of Auslan differs. We acknowledge that there is a dearth of research establishing the decline in first language learning rate, so for conservatism we employ a model that assumes a stepped level decline over an 18-year interval, noting that the impact of intervention differentials is likely to be greater in the early years and disfluency and language deprivation result later in life as a result of inadequate exposure during adolescence.

The average annual benefit of Auslan intervention is \$12,248 (\$10,212 for capability specific benefits) dollars per year.¹³ The modelling assumes that the benefit of Auslan has a differential capability enhancing effect due to the timing of intervention. The greatest benefit is procured where intervention occurs in year 1, while the benefit to an individual receiving a language intervention at age 18 while material does not result in a diminution of the impact of deafness from the profound level.

The life expectancy of Australians is 82.2 years of age, and this serves as the basis for the determination of lifetime benefits differentials associated with early and later intervention.

The lifetime benefit of early versus the later term Auslan intervention (from Y1 versus Y5) (18yr constant level decline) in the model is \$273,782

The lifetime benefit of a 2-year delay in intervention between five and seven years is \$128,245



Change in annual economic benefit associated with intervention timing (DALY method)

13 Please note that this estimate is the average annual benefit level, and aligns to the nominal aggregate benefit level, noting that the benefits accrue in different years. For clarity we present the average rather than the differential value for each year.

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Where we employ a constant level of change model assume that there is no diminution in the impact of disability beyond the 13th year, rather than the 18th year. Assuming that the benefits align to pre-adolescent intervention rather than pre-adulthood

intervention; a highly plausible assumption given the research, the cost of intervention differs. The chart evidences the variation between the two estimation approaches. The cost of delayed intervention (Y5 rather than Y1) is greater at \$374,824.

Appendix 2 – Approximation of learning deficits

To estimate learning deficits caused by the absence of intervention we are able to compare the rate of learning with intervention, with the rate of learning absent of intervention to consider the extent of the learning deficit.

Estimates are based on Humphries et al. (2014) and Blamey (2003). Blamey (2003) states that 'a hard-of-hearing child (within a traditional 'hearing' based learning environment) has about 40–60% of the learning opportunities of a hearing child' because of limited auditory experiences, and, consequently, his or her 'learning rate is about 40–60% of normal' (p. 241). Humphries et al. (2014) note that children that benefit from sign language evidence similar learning outcomes to their hearing peers.

Learning deficits estimation

Intervention learning rate = r1 = 100%

learning rate, no intervention = r2 = 60%

Timing of intervention assumed end y1...end y18

n denotes the years of learning deficit

Age – n = years of normal learning = m

(m X r1) + (n X r2) / Age = Average annual learning deficit

Where a child has intervention delayed from Y1 to Y5, their learning deficit in year 10, assuming no elevated learning rate to counter the deficit; equates to approximately 20%.

Therein, a child not benefitting from a Year 1 intervention, receiving a Year 5 intervention has accrued 20% less knowledge given the differential rates of learning.

Appendix 3 – Exploring pre-lingual deafness and early childhood hearing loss within First Nations communities

There are a number of factors that determine the frequencies of pre-lingual deafness and hearing loss within different cohorts. Hearing loss may result from several different factors, including genetic causes, complications at birth, infectious diseases, chronic ear infections, use of certain medicines, injuries and accidents, exposure to loud noise and ageing (AIHW, 2022). The Word Health Organisation has indicated that 60% of childhood hearing loss is due to preventable causes. Australia's First Nations evidence rates of deafness and hearing loss at disproportionate rates when compared with the broader community, with hearing loss widespread within both pre-lingual and post-lingual Aboriginal and Torres Strait Islander populations and much more common than with non-Indigenous Australians (see Burns & Thomson 2013).

The higher rates of hearing loss are ascribed to higher rates of infection. Otitis media (inflammation and infection of the middle ear) is a significant cause of hearing loss in First Nations Australian children. First Nations Australians suffer the highest rate of otitis media in the developed world (Cornish, 2011). Similarly higher rates of bacterial meningitis also result in higher rates of prelingual and post-lingual hearing loss.

The research of Hanna & Wild (1991) illustrates the significantly elevated rates of meningitis within First Nations communities. The researchers identified the annual incidence rate of H. influenzae meningitis was significantly greater in Aboriginal children (150 episodes per 100 000 children under five years of age per year) than in non-Aboriginal children (27 episodes per 100 000), and the mean age of onset of H. influenzae meningitis was significantly lower in Aboriginal children (6.8 months) than in non-Aboriginal children (19.8 months).

Nonetheless otitis media is claimed to be the principal driver of the high rate of hearing loss. AIHW (2022) published frequency data identifies that total or partial deafness was reported for 3.8% of First Nations children, otitis media (middle ear infection) for 2.6%, and other diseases of the ear for 0.5%. Rates of hearing problems among Indigenous children were higher in Remote areas (9.7%) than non-remote areas (6.4%).

These high rates are not consequential to delinquency, or a lack of familial concern, but rather historical disadvantage, limited access to culturally suitable care, and remoteness. These challenges are further exacerbated by socioeconomic divergences. The impact of these disadvantage levels endures into adolescence.

Intra-community disadvantage also influences the frequency of hearing problems, with greater disadvantage being associated with greater hearing loss frequency rates. First Nations Australians aged 15 and over who lived in the most disadvantaged socioeconomic areas (lowest socio-economic level quintile) were 1.4 times as likely to report hearing (or ear) problems than those living in the most advantaged areas (highest socio-economic quintile) at 18% compared with 13% (AIHW, 2022).

Some progress has been achieved in reducing the rate of chronic suppurative otitis media in remote Northern Territory with rates declining from 24% in 2001 to around 13% in 2013, due to the successful use of pneumococcal conjugate vaccines (Leach & Morris 2017; Leach et al. 2016; Morris et al. 2005), the rates remain vastly higher than those in non-indigenous communities (AIHW, 2022). The rates of otitis media are still the highest amongst all developed nations. Otitis media remains a major health problem in Australia, with an unacceptably great dichotomy

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of incidence and severity of otitis media and its complications between First Nations and non-Indigenous Australians (Kong & Coates, 2009).

Given the evaluated rates of pre- and post-lingual hearing loss and higher rates of profound deafness, the role of sign languages within First Nations communities is critical. Power (2013) notes that many Australian Aboriginal and Torres Strait Islander peoples use a sign language ("hand talk"). There are over 300 sign languages (ABC, 2021) and the languages mirror the local spoken language and are used both in culturally appropriate settings when speech is taboo and for community communication (Power, 2013).

There remains a genuine dearth of research exploring the prospective benefits of sign language with First Nations communities. Deaf Aboriginal and Torres Strait Islander children should be provided with the opportunity to learn a sign language (be it a First Peoples sign language or Auslan), given the protective and cultural benefits associated with language acquisition.

Deaf Aboriginal and Torres Strait Islander children are exposed to the same risks as Deaf non-Aboriginal and Torres Strait Islander children. Indeed, given the challenges that many face in terms of accessing viable intervention services, social inequality and in some instances remoteness, the challenges they face may be far greater. Humphries (2016) notes that "Deaf children who are not provided with a sign language early in their development are at risk of linguistic deprivation; they may never be fluent in any language, and they may have deficits in cognitive activities that rely on a firm foundation in a first language". Sign language provides some security and protection against the uncertainty of alternative interventions. While there is a dearth of intervention specific research, the benefits of sign language for deaf Aboriginal and Torres Strait Islander children are plausibly the same as those evidenced in the Deaf studies literature, when exploring sign language benefits generally. Deaf Aboriginal and Torres Strait

islander children would be protected against the unevenness of other potential interventions and provided with a sound language foundation that is inherently beneficial in learning, and beneficial in second language acquisition.

The rates of hearing loss within First Nations communities, and in particular otitis media are higher than all other developed nations, and consequently should chronic otitis media be better managed through better medical service access, and culturally safe support, the frequency of hearing loss will likely diminish markedly. Nonetheless, for the many that would benefit sign language, sign language-based interventions should be considered, and greater investment is needed to facilitate better access and increased exposure. Sign language should also be considered even when existing interventions are in place, such as oral/aural approaches, as a source of protection, as part of a bicultural, bimodal strategy.

A wholistic approach is needed that acknowledges the complex generational challenges, medical and biological considerations and ensures cultural appropriateness and safety. The dearth of research remains a challenge, Kasper and Leech (2020) were not able to identify a single study that explored the viability of ear health interventions within First Nations communities, in response to otitis media, that met basic robustness criteria. Beswick (2013) asserts that further research with large cohorts of children with and without risk factors needs to be completed to further understand the relationship between risk factors and postnatal hearing loss. There is a similar dearth of research with regard to the viability of differential language-based interventions employing longitudinal data. It is apparent that viable policy requires such research. Similarly, beyond research solutions necessitate greater culturally informed, community led engagement between stakeholders, as noted by Leech (1999) solutions will arise from a greater understanding among Aboriginal and non-Aboriginal Australians of the historical, social and biological determinants of health.



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Education for Deaf people

Disability Royal Commission submission

October 2022

About Deaf Australia

Deaf Australia acknowledges the Traditional Owners and Custodians of the lands on which we work and pay our respects to Indigenous Elders past and present. Sovereignty has never been ceded. It always was and always will be, Aboriginal land.

We recognise the past atrocities against Aboriginal and Torres Strait Islander peoples of this land and that Australia was founded on the genocide and dispossession of First Nations people. We acknowledge that colonial structures and policies remain in place today and recognise the ongoing struggles of First Nations people in dismantling those structures; and especially that of Deaf, Deafblind and hard of hearing First Nations peoples.

We also acknowledge and respect the members of the Deaf Community in Australia, who preserve their rich heritage, culture, and our language; Auslan. We acknowledge our Auslan teachers and educators, promoting awareness, equality, and access through our sign language.

Deaf Australia was founded in 1986 as a not-for-profit organisation that represents all Deaf, Deafblind, and hard of hearing people, and others who are fluent and knowledgeable about Auslan. The focus has and continues to be on developing access to information and accessible communication. We work with Australian governments and collaborate with key stakeholders to make sure that Australia complies with the United Nations Convention on the Rights of Persons with Disabilities. The UN Convention and the National Disability Strategy guides our work; we aspire to achieve equity for Deaf people across all areas of life.

Deaf Australia advises that this document may be publicly distributed, including by placing a copy on our website.

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Key Notes

This section includes key information about the submission that the reader should be aware of while reading.

- In this submission, Deaf Australia will use Deaf person/people/community to refer to all d/Deaf, Deafblind, and hard of hearing people who use Auslan as their language of preference, unless otherwise stated.
- We write broadly about signing Deaf people, but recognise that Deaf people are intersectional beings, and that this paper was written by white Deaf people, so important nuances covering Aboriginal and Torres Strait Islander Peoples, BIPOC and all other intersecting identities are likely to be missing from this paper.
- This submission is not exhaustive and does not cover every aspect of a person's life in relation to education. It is recommended that there is more work done by the DRC to

understand this aspect of a Deaf person's educational experience in addition to this submission.

Introduction

Deaf Australia's vision and mission is that Deaf people are fully engaged citizens who can participate in their communities in Auslan, which includes in educational settings.

Education is a universal basic right for all people, and this is no different for Deaf children and adults. Article 24 (Education) of the Convention on the Rights of Persons with Disabilities (CPRD) states the following – critical points are bolded for emphasis:

2. In realizing this right, States Parties shall ensure that:

- (b) Persons with disabilities can access an inclusive, quality and free primary education and secondary education on an equal basis with others in the communities in which they live;
- (c) Reasonable accommodation of the individual's requirements is provided;
- (d) Persons with disabilities **receive the support required**, within the general education system, to **facilitate their effective education**;
- (e) Effective individualized support measures are provided in environments that maximize academic and social development, consistent with the goal of full inclusion.

3. States Parties shall enable persons with disabilities to **learn life and social development skills** to facilitate their **full and equal participation in education and as members of the community.** To this end, States Parties shall take appropriate measures, including:

- (a) Facilitating the learning of Braille, alternative script, augmentative and alternative modes, means and formats of communication and orientation and mobility skills, and facilitating **peer support and mentoring;**
- (b) Facilitating the learning of sign language and the promotion of the <u>linguistic identity</u> of the deaf community;
- (c) Ensuring that the education of persons, and in particular children, who are blind, deaf or deafblind, is **delivered in the most appropriate languages and modes and means of communication for the individual, and in environments which maximize academic and social development.**

4. In order to help ensure the realization of this right, States Parties shall take appropriate measures to **employ teachers, including teachers with disabilities, who are qualified in sign language** and/or Braille, and to train professionals and staff who work at all levels of education. Such training shall incorporate disability awareness and the use of appropriate augmentative and alternative modes, means and **formats of communication**, educational techniques and materials to support persons with disabilities.

5. States Parties shall ensure that persons with disabilities **are able to access general tertiary education, vocational training, adult education and lifelong learning without discrimination** and on an equal basis with others. To this end, States Parties shall ensure that reasonable accommodation is provided to persons with disabilities.

It is Deaf Australia's stance that the CRPD supports what the Deaf community wants: **education in Auslan, with Deaf teachers using Auslan with other deaf students and peers using Auslan.** This may not necessarily mean in Deaf-centric schools, but it should be instructions delivered in a culturally safe and appropriate way.

Unfortunately, Australia's approach towards education for Deaf people has been brutal and towards segregation of Deaf people. The big focus on inclusive education for all children has actually equated

to <u>segregated education for deaf children</u> – having deaf children in classrooms with other deaf children and Deaf teachers is in itself **inclusion**.

Article 24, 3(b) clearly states that States Parties are responsible for facilitating the learning of sign language and the promotion of the linguistic identity of the deaf community, however this has not been happening, with the closures of Deaf schools and the rabid mainstreaming of deaf children in classrooms where they are often the only deaf child in the room. **This is a systemic, Australia-wide catastrophic failure of and for every single deaf child and adult**, and **it is hearing people's fault**. Those in the government, in the education system, and all other relevant industries have consistently ignored Deaf people's advocacy for better quality education for deaf children and adults in childcare, kindergarten, primary, secondary and tertiary settings.

The quality of education for Deaf people does have an impact on socio-economic factors and socioemotional relationships. *Hearing for Life* reported that approximately 20.1% of people with hearing loss are within the first and second decile for total weekly income, which roughly aligns with the proportion in the broader population who earn below \$37,000 annually.¹ The recent Australian Census showed that Auslan users were over-represented in the salary range of \$7.8k-\$52k, compared to the rest of Australia who did not identify as an Auslan-user.² As soon as the salary increases to \$52k, the numbers drop significantly compared to the rest of the population. Removing those who were not applicable (i.e. under 15 years of age and therefore not in the workforce), only 42.5% of Auslan-users were employed.

This submission will address core issue and what each stage of education looks like for a Deaf signing person and their impacts.

Mini snapshot of the oralism movement

In 1880, the Second International Congress on Education of the Deaf, which was actually the first international conference of deaf educators was held in Milan, Italy; known as 'the Milan Conference' amongst the Deaf community. This conference, attended by 163 hearing people (and one deaf person) who professed to educate deaf children, declared that 'oral education (oralism) was superior to manual education' and passed a resolution to ban the use of sign language in schools. The first two of eight resolutions passed by the convention is as follows:

- The Convention, considering the incontestable superiority of articulation over signs in restoring the deaf-mute to society and giving him a fuller knowledge of language, declares that the oral method should be preferred to that of signs in the education and instruction of deaf-mutes.
- 2. The Convention, considering that the simultaneous use of articulation and signs has the disadvantage of injuring articulation and lip-reading and the precision of ideas, declares that the pure oral method should be preferred.

After this conference, all Deaf schools across the world immediately began using speech therapy without sign language as a method of education.

This led to unimaginable and irreparable harm and damage for all Deaf people across the world, and this effect remains to this day. There are still well-funded, stridently vocal proponents who advocate

¹ Hearing for Life. Hearing Australia (2020)

² https://www.sbs.com.au/census-explorer-2021/index.html?lang=en&languages=auslan&topic=work-and-income

for this method, despite the very clear evidence that it did not work.^{3,4,5} It could be argued that no other event in history had a more significant impact on the education and lives of deaf people throughout the world. Not only did this affect Deaf people at the time, but it also affected deaf children across the next hundred-plus years and contributed to intergenerational trauma with those who had deaf children and grandchildren and so on.

Deaf teachers lost their jobs and there was an overall decline in Deaf professionals⁶. Prior to this resolution, there were successful Deaf politicians, writers, artists, lawyers and all other professions, and all used sign language. There was great shame associated with sign language, reinforced by hearing people^{7,8}.

A formal apology was made by the board at the 21st International Congress on Education of the Deaf in Vancouver, BC, Canada, in 2010 accepting the dangerous ramifications of such ban as an act of discrimination and violation of human and constitutional rights and rejecting all of the 1880 Milan resolutions. But the damage is done. And continues. There was no redress for any deaf person affected by this. And medical professionals and "educators" continue to push this agenda but under the heading of "learning to listen and speak", which still recommends removing all Auslan.

The lasting impacts of this horrendous and disgusting⁹ action has meant that there is still a focus on the oralism movement, with shame associated with Auslan in Australia. There is still a perception that the deaf child is not successful if they do not speak or use hearing devices, and there are thousands of studies on making the deaf child speak or speak better, but not very much on whether the deaf child is accepted for who they are, celebrated for who they are and the determinants for a successful, healthy and loved/loving deaf person.

Unnecessarily challenging binary choices for caregivers

Unfortunately, since hearing people working in deaf spaces as medical professionals tend to offer the following choices as binary options^{10,11} which are implied to be not complementary: (1) learning to speak and use hearing devices, such as hearing aids or cochlear implants, *versus* (2) learning Auslan; instead of supporting and encouraging families to choose both options, deaf children are then usually funnelled towards very specific early intervention and education methods – typically the learning to hear and speak pathway.

Remedies with potential catastrophic harm to development are not accepted as first line treatments, nor routinely recommended in life. Yet, this is the current paradigm for the care of deaf babies. The

³ Iain Hutchison (2007) Oralism: A Sign of the Times? The Contest for Deaf Communication in Education Provision in Late Nineteenth-century Scotland, European Review of History: Revue européenne d'histoire, 14:4, 481-501, DOI: 10.1080/13507480701752136

⁴ MacDougall, J. C. (1971). The education of the deaf in Canada. Canadian Psychologist / Psychologie canadienne, 12(4), 534–540. <u>https://doi.org/10.1037/h0082160</u>

⁵ Baynton, D. C. (1992). "A Silent Exile on this Earth": The Metaphorical Construction of Deafness in the Nineteenth Century. American Quarterly, 44(2), 216–243. <u>https://doi.org/10.2307/2713041</u>

⁶ Ladd, P. (2003). Understanding deaf culture: In search of deafhood. Multilingual Matters.

⁷ Hilde Haualand & Ingela Holmström (2019) When language recognition and language shaming go hand in hand – sign language ideologies in Sweden and Norway, Deafness & Education International, 21:2-3, 99-115, DOI: 10.1080/14643154.2018.1562636

 ⁸ Napier, J. (2021). 'My Experience Was Just Part of My Life': Life, Shame and Brokering. In: Sign Language Brokering in Deaf-Hearing Families. Palgrave Macmillan, Cham. <u>https://doi.org/10.1007/978-3-030-67140-2_5</u>
 ⁹ And triggering

 ¹⁰ Hall, W.C. What You Don't Know Can Hurt You: The Risk of Language Deprivation by Impairing Sign Language Development in Deaf Children. Matern Child Health J 21, 961–965 (2017). https://doi.org/10.1007/s10995-017-2287-y
 ¹¹ Hecht, J.L. Responsibility in the Current Epidemic of Language Deprivation (1990–Present). Matern Child Health J 24, 1319–1322 (2020). https://doi.org/10.1007/s10995-020-02989-1

cochlear implant (CI) and intensive spoken language therapy have become the standard of care as the primary consideration for language acquisition, and therefore, the lynchpin of all downstream higher order cognitive function. However, in the 30 years of paediatric cochlear implantation, there has not been a single well-designed prospective study of outcomes demonstrating the CI as safe and effective for a large population of deaf children for the purpose of spoken language acquisition. In fact, the opposite has been shown: some children are unable to derive any meaningful linguistic benefit from their cochlear implants.¹²

Children who do receive benefit from CIs are still subjected to both absolute and relative language deprivation early in life. Implantation results in at least a year without meaningful linguistic input. After CI activation, the child receives attenuated input, because the 24 channels of the CI produce a degraded sound signal compared with the tonotopic transmission of the impulses of 20,000 outer hair cells of the human cochlea. CI recipients do not acquire spoken language spontaneously. Rather as toddlers, they begin intensive long-term therapy to learn how to create linguistic meaning from the CI's electrical signal and form intelligible speech.

The impact of this disruption to early and natural language acquisition in CI recipients is not well understood. Even in the best scenarios and outcomes, when children with CIs (and no sign language exposure) develop good spoken language skills, research shows that there may be a long-term impact on literacy¹³. Therefore, it is probable that they have been disadvantaged by their late and then attenuated exposure to language.

Industry sponsored cochlear implant research and its inherent conflicts of interest lead to confusion because data reporting and discussions focus on the success of the device and emphasize the ability of the CI as a means to spoken language skills without disclosing the implications of incomplete language acquisition (i.e., language deprivation) also seen in the subjects. For example, a publication from the Child Development and Cochlear Implant (CDaCI) dataset revealed that a subset of children failed to receive any linguistic benefit from their CI's even after 5 years of therapy¹⁴. However, the permanent and life-altering impact to these children due to language deprivation was not considered. When this specific subset of children is excluded from other published analyses of this dataset¹⁵, it obscures the harm to children who have received implants. This is widespread in CI research because children who are enrolled as subjects in CI studies, but then don't benefit from their CIs, frequently leave the studies. This makes it impossible to use CI outcome studies to accurately assess the risks of relying on cochlear implants as the sole means for language acquisition.

If the caregivers choose the hearing devices and learning to speak and listen pathway, they are encouraged to use this method for a very long time even if the child is not demonstrating any

¹² Hecht, J.L. Responsibility in the Current Epidemic of Language Deprivation (1990–Present). Matern Child Health J 24, 1319–1322 (2020). <u>https://doi.org/10.1007/s10995-020-02989-1</u>

¹³ Geers, A. E., Mitchell, C. M., Warner-Czyz, A., Wang, N. Y., Eisenberg, L. S., & The CDaCl Investigative Team. (2017). Early sign language exposure and cochlear implantation benefits. Pediatrics, 140(1), e20163489. https://doi.org/10.1542/peds2016-3489.

¹⁴ Barnard, J. M., Fisher, L. M., Johnson, K. C., Eisenberg, L. S., Wang, N. Y., Quittner, A. L., et al. (2015). A prospective, longitudinal study of US children unable to achieve open-set speech recognition five years after cochlear implantation. Otology and Neurotology, 36(6), 985–992. <u>https://doi.org/10.1097/MAO.00000000000723</u>.

¹⁵ Geers, A. E., Mitchell, C. M., Warner-Czyz, A., Wang, N. Y., Eisenberg, L. S., & The CDaCl Investigative Team. (2017). Early sign language exposure and cochlear implantation benefits. Pediatrics, 140(1), e20163489. <u>https://doi.org/10.1542/peds2016-3489</u>.

progress in this area. This is also known as Language Deprivation Syndrome (LDS)^{16,17,18}. Language Deprivation Syndrome, which begins in infancy and progresses throughout early childhood, comprises a spectrum from mild to severe with a predictable constellation of cognitive and behavioural symptoms that include language dysfluency and its impact on literacy and impairments in higher cognitive function. Memory, time sequencing, understanding cause and effect, mood regulation and other features of abstract thought and executive function are affected¹⁹. Functional neuroimaging studies of deaf adults with language deprivation reveal a characteristic reorganization of cortical architecture²⁰. LDS is a permanent, life-altering, and preventable disability and although it rarely occurs in hearing people, it is epidemic in the deaf population²¹.

The delay in language input is due to a medical model of deafness that prioritises **hope for the eventual acquisition of spoken language over the immediate need for exposure to accessible language.** The caregivers will either persevere in this method until the child is grown (meaning the child does not successfully engage in their education or otherwise) or change tracks to learning Auslan when the child is almost past the age of most effective language acquisition. The ethical problem is that by the time this choice of treatment has been deemed unsuccessful, such children have been deprived of necessary linguistic input during the first few years of life. Thus, they have been denied the solid foundation upon which all cognitive development depends.

Unfortunately, the late addition of a signed language, no matter how rich, robust, and immersive, cannot reverse the linguistic, cognitive, and socio-emotional effects of early language deprivation^{22,23}. Auslan is a fully accessible language for deaf children from birth and sign language was once considered to be the natural first language of deaf children. However, efforts to eradicate Auslan and prevent deaf children from having access to it infiltrated medical practice and the culture at large during the eugenics movement.^{24,25,26,27} This legacy of eugenics is still evident in medicine today in (1) the failure to value sign language and (2) the acceptance of practices regarding deaf children that are contrary to medical ethics and anomalous to the standards of medical practice otherwise.

 ¹⁶ Hall, W.C. What You Don't Know Can Hurt You: The Risk of Language Deprivation by Impairing Sign Language
 Development in Deaf Children. Matern Child Health J 21, 961–965 (2017). https://doi.org/10.1007/s10995-017-2287-y
 ¹⁷ Hecht, J.L. Responsibility in the Current Epidemic of Language Deprivation (1990–Present). Matern Child Health J 24, 1319–1322 (2020). https://doi.org/10.1007/s10995-017-2287-y

¹⁸ Matthew L. Hall, Inge-Marie Eigsti, Heather Bortfeld, Diane Lillo-Martin, Auditory Deprivation Does Not Impair Executive Function, But Language Deprivation Might: Evidence From a Parent-Report Measure in Deaf Native Signing Children, The Journal of Deaf Studies and Deaf Education, Volume 22, Issue 1, 1 January 2017, Pages 9–21, https://doi.org/10.1093/deafed/enw054

¹⁹ Hall, W. C., Levin, L. L., & Anderson, M. L. (2017b). Language deprivation syndrome: A possible neurodevelopmental disorder with sociocultural origins. Social Psychiatry and Psychiatric Epidemiology, 52(6), 761–776. https://doi.org/10.1007/s00127-017-1351-7.

 ²⁰ Mayberry, R. L., Chen, J.-K., Witchner, P., & Klein, D. (2011). Age of acquisition effects on the functional organization of language in the adult brain. Brain and Language., 119(1), 16–29. https://doi.org/10.1016/j.bandl 2011.05.007.
 ²¹ Gulati, S. (2018). Language deprivation syndrome. In N. S. Glickman & W. C. Hall (Eds.), Language deprivation and deaf

mental health (pp. 24–53). New York: Routledge.

 ²² Mayberry, R. L., & Kluender, R. (2017). Rethinking the critical period for language: New insights into an old question from American Sign Language. Bilingualism: Language and Cognition, 21, 886. <u>https://doi.org/10.1017/S1366728917000724</u>.
 ²³ Napoli, D. J., Mellon, N. K., Niparko, J. K., Rathmann, C., Mathur, G., Humphries, T., et al. (2015). Should all deaf children learn sign language? Pediatrics, 136(1), 170–176. <u>https://doi.org/10.1542/peds.2014-1632</u>.

²⁴ Ladd, P. (2003). Understanding deaf culture: In search of deafhood. Bristol: Multilingual Matters Ltd.

²⁵ Baynton, D. C. (1996). Forbidden signs: American culture and the campaign against sign language. Chicago: University of Chicago Press.

²⁶ Lane, H. (1992) The mask of benevolence: Disabling the deaf community. Random House

²⁷ Bell, A. G. (1893). Upon the formation of a deaf variety of the human race. Washington: National Academy of Sciences.

A paper published in 2020²⁸ points the responsibility of the current epidemic of language deprivation syndrome squarely at physicians and professionals working in early hearing detection and intervention spaces. People in these spaces tend to blame the poor academic and social outcomes of deaf people as an unfortunate and inevitable consequence of their deafness, which is dangerously incorrect.

Approximately 95% of deaf children are born to hearing parents²⁹, and 81% of this cohort never learn sign language³⁰. Caregivers must be offered supportive options for everything - they should be able to explore all options: their child can have hearing devices, learn Auslan *and* learn to speak and hear. This should be celebrated, and the child should be able to grow up with languages from day one, and then the caregivers can then choose the best and most appropriate educational environment for their child, depending on which language and capabilities the child has.

Recommendations

- 1. Provide all information about the deaf child's options in a neutral and unbiased way this information should be delivered by a Deaf person.
- 2. Clearly put forward a preference for the deaf child to learn *both* Auslan and spoken/written English as well as using hearing devices (if chosen) from day one.
- 3. Emphasise that choosing cochlear implants does not mean the child is a hearing person or has the same benefits of a hearing baby.

Early intervention

Please see supplementary paper on early intervention for a more comprehensive overview of this topic.

Based on the scarce evidence available, early intervention continues to operate a medical perspective of deafness by operating on the assumption that speech and listening is the preferred options of caregivers of deaf babies. Families are not offered the opportunities of bilingual and bimodal programs unless they are specifically asked for by the caregivers. A deaf child's early years of life are often spent developing listening and speaking skills at the cost of full access to a language, meaning that they are at risk for language deprivation (see above section on unnecessarily challenging binary choices for parents).

If the new caregiver of a deaf child is exposed to clear and consistent push towards speaking and listening by professionals in person, and in their online research, it is important to ask the question: if there are no resources or information about Auslan, how comfortable and confident would the caregivers feel incorporating this, or asking for it? And furthermore, how would they even know this exists as an excellent and viable option?

Recommendations

1. Early intervention should implement a default practice of bimodal bilingualism from day one of the deaf child's identification of deafness to provide the best possible educational outcomes.

²⁸ Hecht, J.L. Responsibility in the Current Epidemic of Language Deprivation (1990–Present). Matern Child Health J 24, 1319–1322 (2020). <u>https://doi.org/10.1007/s10995-020-02989-1</u>

²⁹ Mitchell RE, Karchmer MA. Chasing the mythical ten percent: parental hearing status of deaf and hard of hearing students in the United States. Sign Lang Studies. 2004;4(2):138-163.

³⁰ Admire, A., & Ramirez, B. (2021). Violence and Disability: Experiences and Perceptions of Victimization Among Deaf People. Journal of Interpersonal Violence, 36(1–2), NP1–NP25. <u>https://doi.org/10.1177/0886260517730564</u>

- 2. Presenting timely information about the impact of bimodal and bilingual research can alleviate the fear that the child may not be able to communicate with their families.
- 3. Deaf mentors would provide language modelling and serve as an important source of support for families of deaf children.

Childcare & Kindergarten

Childcare centres are not set up to be disability-inclusive at best, and there are no deaf-specific childcare centres, or childcare centres that have a strong Auslan focus. This means the deaf child is often isolated and alone in an environment where social connections are formed, and communication and language development are critical. The educators in the centre often cannot sign or communicate with the child, which means they also miss out on forming crucial social relationships with key adults, and being instructed in key activities, such as toilet training, mobility exercises and other childcare centre activities.

Mother Goose

A program (Mother Goose) was established for Deaf parents, or those with deaf babies to join a playgroup/mother's group, where parents could communicate in their language (Auslan) and also learn child-bonding activities that were compatible with Auslan and Deaf people – for example, signing songs onto the baby's body.

This program ran only for 3 year and was ceased due to a lack of funding, but parents who attended found immense value in this program – Deaf mothers felt a sense of connection and were able to find the same benefits as those who are hearing and attend mother's groups.

What currently happens is some parents attempt to advocate for a Deaf adult to come to the childcare centre as an educator, or Auslan language model for the deaf child – but this is entirely dependent on the goodwill of the centre, the success of the funding, and the ability to source such an adult who is available and willing to work for low amounts of pay. When this succeeds, the Deaf adult is usually only there for limited numbers of hours per week, and the Deaf adult themselves are often also isolated in the environment with no other adult peers who know Auslan.

My grandmother came to visit the family when I was in Kinder. She popped her head in to see me in the classroom and then told my mother that she felt so sorry for me because I was playing all alone and even though I tried to connect with others, they would just ignore me because I couldn't speak.

Recommendations

- 1. There should be a deaf and/or Auslan-focused childcare available in many locations for deaf children and deaf families.
- 2. Childcare centres should have access to sufficient funds to bring in Deaf peers to work in childcare centres with deaf children.
- 3. Childcare centre educators should be supported to learn Auslan as part of professional development if they wish.
- 4. Caregivers' groups for Deaf caregivers/parents should be established and funded, this should also be an option for caregivers of deaf babies.

Primary & Secondary School

There are limited numbers of schools in Australia that focus on educating deaf children, and most of those schools have expanded their enrolment to include "deaf-plus" children: children who usually have an additional disability diagnosis that is part of their deafness, or a comorbidity, such as autism, CHARGE syndrome, cerebral palsy, or any other disability. While all children, including deaf children with disabilities, absolutely should be enrolled in the education environment of their choice that is compatible with their requirements, it has also meant that teachers in these environments have changed their level of teaching to a level that is not concordant with hearing children without disabilities, which also means that deaf children who are fluent in Auslan also miss out on quality and appropriate education.

Additionally, these schools are often the "place of last resort" for deaf children who "failed" to learn to speak and/or listen, meaning children with language deprivation syndrome³¹ (see above section on unnecessarily challenging binary choices for parents), and those who learned a language (Auslan) at a later age – usually when they start school, are placed in deaf schools with minimal language. Deaf children who are fluent in Auslan are held back in their classes by their peers who need extra time and explanations to learn the same lessons.

I have Deaf parents who went to different Deaf schools with one being sign only, the other oral only. My parents chose to send me to a hearing school where I only had an interpreter sometimes. When I asked why, they said they did not want me to have the same experiences they had, especially as an intelligent child. My parents are illiterate, and I have a high paying, highly respected job now. My friends who have Deaf parents and went to Deaf schools never went to uni (sic), and many are on the dole, or in low-paying jobs. I am not even 40, so we are speaking about Deaf education in the last 20 years. I think this speaks volumes.

This may seem harsh, and many deaf schools would disagree. However, this is definitely the case, and has meant that many deaf children are being placed in mainstream education environments where they have a better chance of attaining appropriate education. However, this also means that these same children must rely on interpreters who are often not qualified or appropriate for interpreting for deaf children, Teachers of the Deaf (ToD), speech therapists, and a whole range of other professionals who come into the school to ensure the success of the deaf child. Despite these "tools", a large percentage of deaf children grow up and graduate from their educational journey with limited social skills, and a literacy level of those in grade four to seven.³² Lack of access to incidental information such as family conversations may also leave deaf people with a limited source of basic information. These people are at risk of receiving inadequate information to manage and make informed choices about their health and, consequently, they experience reduced autonomy. These same deaf children are often isolated and alone as the only deaf child in the school.

In situations where deaf children have other deaf peers in the school, they are often compared to each other – deaf children who have "better" literacy skills are often held up to the other deaf children as the role model, or given extra praise; or have to share resources, such as interpreters

³¹ Hall WC, Levin LL, Anderson ML. Language deprivation syndrome: a possible neurodevelopmental disorder with sociocultural origins. Soc Psychiatry Psychiatr Epidemiol. 2017 Jun;52(6):761-776. doi: 10.1007/s00127-017-1351-7. Epub 2017 Feb 16. PMID: 28204923; PMCID: PMC5469702.

³² https://www.phrp.com.au/issues/december-2021-volume-31-issue-5/the-healthcare-system-through-a-deaf-lens/

who may be allocated to the child who cannot speak as well as the other deaf children – which means the other children miss out.

When I was in school, the other kids got interpreters, but because I could speak and hear "well", I never got an interpreter. But the teacher would always speak to the board, and I would get into trouble for not understanding them. They would always get angry and say: '[Name redacted]! Listen!!!'

Over the years, there has been a push towards mainstreaming deaf children, which usually means the child is placed in a local school, either with no other deaf children, or a school that has deaf facilities or units, which is where extra staff is employed to support the deaf child/ren's learning, including TODs, interpreters and other relevant roles. This is considered "inclusive education", but it is not truly inclusive for deaf learners and does not meet deaf learners' needs.

I think sometimes what's viewed as segregation – so having a Deaf school at the exclusion of others, to me, that's actually inclusion. It gives an environment that is inclusive. The reason I say this is sign language is all around them. They have the ability to communicate. They have deaf peers, people they identify with...

If we could have a school or a university for Deaf people - and, again, it is very difficult for people to understand, because they think that is segregation. But for socialisation and language opportunities to develop knowledge and 35 access education, it is actually inclusion. It's all there for you in one space. – Brett Casey, DRC Public Hearing 29

Placing deaf children in mainstream schools, without access to or direct instruction in sign language, without instruction by deaf teachers, and without access to bilingual education – is NOT inclusive education. The World Federation of the Deaf (WFD) released a statement that highlighted that *inclusive education is an experience not a placement*³³ (see below section on inclusive education).

Relationships and friendships with peers are related not only to social and behavioral development but also to children's academic achievement.³⁴ Levels of peer acceptance may affect the opportunities to make friends³⁵ and friendships provide the context for social, emotional, and cognitive development. Deaf people frequently report being bullied and isolated in mainstream settings, and not being able to connect with their hearing peers in the classroom, because of language barriers. Deaf students report higher incidents of bullying and neglect from teachers than hearing students³⁶, and teachers believed that deaf students were oversensitive and misinterpreted ambiguous situations as cases of bullying³⁷, which shows why deaf teachers, peers and schools are needed.

Studies have demonstrated that deaf children (including those with cochlear implants) have better outcomes in one-on-one settings with their non-deaf peers than they do with group settings of two

³³ <u>https://wfdeaf.org/wp-content/uploads/2018/07/WFD-Position-Paper-on-Inclusive-Education-5-June-2018-FINAL-without-IS.pdf</u>

³⁴ Loes N. Wauters, Harry Knoors, Social Integration of Deaf Children in Inclusive Settings, The Journal of Deaf Studies and Deaf Education, Volume 13, Issue 1, Winter 2008, Pages 21–36, <u>https://doi.org/10.1093/deafed/enm028</u>

³⁵ Gest SD, Graham-Bermann SA, Hartup WW. Peer experience: Common and unique features of number of friendships, social network centrality, and sociometric status, Social Development, 2001, vol. 10 (pg. 23-40)

³⁶ Weiner, M. T., Day, S. J., & Galvan, D. (2013). Deaf and Hard of Hearing Students' Perspectives on Bullying and School Climate. American Annals of the Deaf, 158(3), 334–343. http://www.jstor.org/stable/26234900

³⁷ Martin Pinquart & Jens P. Pfeiffer (2015) Bullying in Students With and Without Hearing Loss, Deafness & Education International, 17:2, 101-110, DOI: 10.1179/1557069X14Y.0000000044

or more non-deaf children.³⁸ There have been studies on how non-deaf students perceive deaf students, citing words such as 'asocial' and 'antisocial', and that deaf children in hearing schools tend to be more involved in networks without any friendships than their hearing peers³⁹, and to have a higher chance of not having friends.⁴⁰

They also report feeling like they have a constant "Big Brother is watching" vibe, when they have interpreters in the classroom – they are constantly under an adult person's watchful gaze in all their classrooms. This has led to deaf children and teenagers feeling like they were not able to behave like their non-deaf peers.

I wasn't allowed to talk when the teacher had their back to us because the interpreter would bang on my desk and force me to watch. This was humiliating because it made it obvious to the other hearing students that I was being "caught" all the time and this prevented them from including me in the classroom like a normal kid. But I'd look around and see them whispering to each other all the time. I hated it.

But at the same time, deaf children were more likely to be neglected by their teachers than their hearing peers⁴¹. This is in part due to a shift away from direct education that leaves many deaf students with low amounts of information and language input. The majority of deaf students now learn through mediated or interpreted education, meaning students receive instruction secondhand through either a sign language interpreter, or by attempting to follow the teacher speaking in the classroom.⁴² Mediation also includes instruction received through text, such as transcription of the teacher's lessons.⁴³

One study suggests that deaf students using educational interpreters only comprehend approximately 60%–75% of the content from lectures, as compared to hearing students who comprehend 85%–95% of the content.⁴⁴ Many factors may influence student comprehension, including the competency of the interpreters. As a result of high demand, many underqualified school interpreters are hired; a 2006 study in America revealed that only 38% of those working as educational interpreters achieved the minimum proficiency level for most states.⁴⁵ Anecdotal information leads Deaf Australia to suspect that this number is even lower in Australia. Even "good" interpreters were reported to incorrectly communicate deaf students' answers, leaving students

³⁸ Daniela Martin, Yael Bat-Chava, Anil Lalwani, Susan B. Waltzman, Peer Relationships of Deaf Children With Cochlear Implants: Predictors of Peer Entry and Peer Interaction Success, The Journal of Deaf Studies and Deaf Education, Volume 16, Issue 1, Winter 2011, Pages 108–120, <u>https://doi.org/10.1093/deafed/enq037</u>

³⁹ Loes N. Wauters, Harry Knoors, Social Integration of Deaf Children in Inclusive Settings, The Journal of Deaf Studies and Deaf Education, Volume 13, Issue 1, Winter 2008, Pages 21–36, <u>https://doi.org/10.1093/deafed/enm028</u>

⁴⁰ Nunes T, Pretzlik U, Olsson J. Deaf children's social relationships in mainstream schools, Deafness and Education International, 2001, vol. 3 (pg. 123-136)

⁴¹ Nunes T, Pretzlik U, Olsson J. Deaf children's social relationships in mainstream schools, Deafness and Education International, 2001, vol. 3 (pg. 123-136)

⁴² Gina A. Oliva and Linda Risser Lytle, Turning the Tide: Making Life Better for Deaf and Hard of Hearing Schoolchildren (Washington, DC: Gallaudet University Press, 2014).

⁴³ Gina A. Oliva and Linda Risser Lytle, Turning the Tide: Making Life Better for Deaf and Hard of Hearing Schoolchildren (Washington, DC: Gallaudet University Press, 2014).

⁴⁴ Marc Marschark, Patricia Sapere, Carol Convertino, and Rosemarie Seewagen, "Educational Interpreting: Access and Outcomes," in Interpreting and Interpreter Education: Directions for Research and Practice, ed. Marc Marschark, Rico Peterson, and Elizabeth A. Winston (New York: Oxford University Press, 2005).

⁴⁵ Brenda Schick, Kevin Williams, and Haggai Kupermintz, "Look Who's Being Left Behind: Educational Interpreters and Access to Education for Deaf and Hard-of-Hearing Students," Journal of Deaf Studies and Deaf Education 11, no. 1 (2006): 3–20.

feeling embarrassed and frustrated.⁴⁶ K–12 interpreters are often spread thin and have to fill the roles of friend, teacher, parent, and interpreter.⁴⁷ Poor education of deaf students and mutual confusion between teachers and interpreters and/or deaf students leaves deaf students with a lingering lack of language communication skills.

Every time I went to talk, the interpreter would stop me and ask me to repeat myself over and over again and I would get embarrassed about wasting everyone's time and sounding stupid because the interpreter didn't understand me. My funny jokes were horribly mangled, and nobody ever laughed. I just stopped contributing in the classroom.

There have been reports of bullying by teachers. When a deaf child is being bullied by a signing teacher and reports this, who would believe the child, especially when insidious and hard to quantify language is being used?

Last month I was walking past the Deaf school, and I saw a child, maybe 9 years old, the child looked tired, and they were being berated by their teacher in Auslan, in front of their classmates. The teacher was saying things like "If you don't do your schoolwork, you will grow up stupid. You will be dumb. You won't have a job. Do you want that?" The child was silent and just saying no, but the teacher kept going for about 10 or 15 minutes. I made a complaint, but it still weighs heavily on me. Do you think the teacher would have done that to a hearing child in a hearing school? I don't think so.

People have also reported that when they made complaints about their interpreters, they were not believed, or the interpreter manipulated the situation to make it seem like the deaf person "misunderstood" the situation, exploiting their position and non-balanced dynamic as a hearing, adult person. In other circumstances, the only way the deaf person could make a complaint about their interpreter was via the interpreter themselves – imagine being a young child or teenager, making a complaint about the person while the having to trust the same person to interpret for you – word for word. No adult or hearing person can do this, why should we expect a child or young person with less confidence and skills to do this?

⁴⁶ Gina A. Oliva and Linda Risser Lytle, Turning the Tide: Making Life Better for Deaf and Hard of Hearing Schoolchildren (Washington, DC: Gallaudet University Press, 2014).

⁴⁷ Rhoda Smietanski, "Secondary Educational Interpreters: Role Ambiguity and Role Strain (Master's Thesis)," Western Oregon University, (2016), https://digitalcommons.wou.edu/theses/33.

Deaf children and young people may also not be aware of their rights, given the lack of access to language or intentional teaching of those skills and rights. Compared to hearing people who pick up on incidental learning and constant and ongoing exposure to other people and experiences around them of people that are like them (i.e., imagine a child arriving in the classroom and complaining about their experience on the bus by the bus driver abusing them verbally – the class and teacher may engage in a discussion about what to do, and share their own experiences where they had been verbally abused by other people in public and the steps they took – the deaf person in this classroom may miss out on all of this information. In contrast, a deaf person arriving in the classroom and complaining about how when they were writing their order at a café, the server started serving other people behind them in line, and they had to wait to order, or say, the server got annoyed, rolled their eyes, and muttered something while they wrote their order – there would be nobody in the classroom who had the same experience, or knowhow to resolve this issue.), the deaf person lacks opportunities to learn critical life skills and strategies to manage situations.

Parents of deaf children have reported that schools often cannot afford to recruit or pay interpreters a reasonable wage – many times deaf students have to share their pool of funding to source one interpreter who is then shared between multiple students, despite not being in the same classroom or even year level. Students in the same year levels are often lumped into the same classrooms despite their differing interests or learning abilities – the students are often put into the lowest achieving classroom, given the capabilities of the least-capable student.

Recommendations

- 1. There should be bilingual and bimodal education environments for deaf children.
- 2. Deaf children and young people should have ongoing training opportunities to learn their rights, especially around interpreting.
- 3. All schools should be funded to provide whatever support the deaf child wants or needs by the Department of Education in their state without question or reduction of costs.
- 4. Deaf schools should be supported to provide education at a level comparable to other schools, and not be forced to attenuate their lessons for the students with LDS.
- 5. Deaf children and young people should be in classrooms with other deaf peers.
- 6. Deaf gain and Deaf awareness training should be mandatory for all people and educators working with deaf children and young people. This will help the understanding of what is meant by bullying, abuse, violence, neglect and exploitation for those in schools.
- 7. A specific training course should be created for interpreters who will work in school settings.

Tertiary Education

Adult Education

Adult education courses are not funded by the government, so Deaf people are unable to access these courses, either for professional development or personal interest. Additionally, these courses often include material that is audio-based and provided without transcripts or captions making this inaccessible on another level for the Deaf student. Furthermore, students are often required to provide oral reports, or video evidence of their work, but if they use Auslan, how can this be marked?

The NDIS has helped somewhat, but people often have a limited budget, or their planners refuse to fund accessibility for these courses, citing the Department of Education is responsible for accessibility for these settings. Not all Deaf people have NDIS. And having budget to provide

accessibility does not equate awareness from the providers of the course around Deaf people's English literacy or needs – which means the Deaf student still must advocate for accessibility, inclusion and awareness, on top of their courseload.

TAFE

It can be challenging to enter TAFE and get the appropriate interpreters, especially with increasingly tight budgets for disability access. This also applies to apprenticeships and other relevant government-funded educational environments. TAFEs also don't often have sufficient budget to also pay for notetakers or other assistance.

Apprentices who have to attend TAFE report challenges with interpreters given they have interpreters at TAFE, but not on site when they are doing their apprenticeship.

University

Two interpreters are required for university lectures and tutorials, and crucially, these interpreters must be capable of interpreting topics at a higher and intensive level, especially with the associated jargon. Timetables are created for each semester and released just prior to the start of the semester, which makes it challenging to secure interpreters in time for the semester – the student often must choose a timetable that suit the interpreters' availability instead of their own preferences.

Often new terminology and meanings are introduced during the lecture, which is not compatible with how Auslan is used: which tends to introduce meaning before the word – opposite to how English is used. This can be challenging for all people involved, the Deaf person and the interpreting team.

Students often have to advocate for multiple accessibility requirements, such as interpreting, transcription and notetaking, and disability liaison officers (DLOs) often try and force the student to choose between the options, citing cost as a limiting factor. Transcripts often have typos or record the wrong word which causes confusion for the student.

Recommendations

- 1. Unlimited and undisputed funds available for all accessibility requirements for all deaf people regardless of which institute they are in, Adult Education, TAFE or University.
- 2. Education institutes take responsibility for translating all materials from Auslan into English if video evidence is required.
- All videos and audio information should have captions and transcripts available as a minimum.

Inclusive Education

The WFD has played a central role in drafting the CRPD with special attention paid to Article 24, which mentions sign language in several articles. As part of this process, the WFD took the position that bilingual education for deaf learners is a form of education within an inclusive education system.⁴⁸ In successive drafts of the CRPD, an operational definition took hold where inclusion was defined as placement in mainstream schools. However, throughout this process, a "sensory exception" for deaf, blind, and deafblind learners enjoyed general support in terms of recognising

⁴⁸ Kauppinen, L. and M. Jokinen. 2014. "Deaf culture and linguistic rights." In *Human rights and disability advocacy* edited by M. Sabatello and M. Schulze, 131-145. Philadelphia: University of Pennsylvania Press

the unique needs of these groups of learners.⁴⁹ This exception and understanding of deaf learners' needs is also in keeping with previous and current UN instruments, such as the *1994 Salamanca Statement and Framework for Action on Special Needs Education* which noted "Owing to the particular communication needs of deaf and deaf/blind persons, their education may be more suitably provided in special schools or special classes and units in mainstream schools" (par. 21).⁵⁰ This perspective was also reflected in the UN Standard Rules on the Equalization of Opportunities for Persons with Disabilities.⁵¹ More recently, the 2018 CRPD General Comment on Equality and Non-discrimination⁵² (par. 65) states, *"To ensure equality and non-discrimination for deaf children in educational settings, they must be provided with sign language learning environments with deaf peers and deaf adult role models."*

Deaf learners have a unique need for instruction in sign language, opportunities to study sign language and deaf culture, and opportunities to participate with their peers in congregated settings that allow for linguistic and cultural development. Due to shared ontologies and experiences, deaf learners also have a need for instruction from deaf teachers who can advocate for their students and transmit social and cultural capital.⁵³ These rights are outlined in Article 24(3[c]) of the CRPD, which states: 'the education of persons, and in particular children, who are blind, deaf, or deafblind, is delivered in the most appropriate languages and modes and means of communication for the individual, and in environments which maximize academic and social development.' This type of setting appears to be deemed "segregated" in the General Comment,⁵⁴ which works to the detriment of many deaf learners' self-actualisation and educational achievement through access to direct instruction in sign language and to bilingual education, which are most often not effectively supported by mainstream settings. Moreover, Article 24(4) calls for States Parties to "take appropriate measures to employ teachers, including teachers with disabilities, who are qualified in sign language." This means deaf learners' right to have deaf teachers is supported by the CRPD. Although the General Comment no. 4 calls for mainstream schools to provide supports for all learners, there remains a failure to recognise the value of deaf schools and other signing spaces for deaf learners' opportunities to acquire sign language proficiency and literacy, and to reach their potential in terms of educational achievement and cultural identity development. In contrast, the 2018 General Comment on Equality and Non-discrimination (par. 65) specifically mandates provision of sign language environments with deaf teachers.

Recommendations

In order to achieve inclusive education for deaf learners, it is critical that all deaf children, regardless of where they attend school, are able to access high-quality instruction in a sign language.

1. This means that accommodations such as interpreters and note takers must be accompanied by opportunities to study with other deaf students and with teachers, including deaf

⁵⁰ <u>http://www.unesco.org/education/pdf/SALAMA_E.PDF</u>

52 https://daccess-ods.un.org/tmp/1053905.56156635.html

⁴⁹ Murray, J., De Meulder, M., and D. le Maire. 2018. "An Education in Sign Language as a Human Right? An Analysis of the Legislative History and on-going Interpretation of Article 24 of the UN Convention on the Rights of Persons with Disabilities (CRPD)." *Human Rights Quarterly*, *40*(1), 37-60. doi: 10.1353/hrq.2018.000

⁵¹ Murray, J., De Meulder, M., and D. le Maire. 2018. "An Education in Sign Language as a Human Right? An Analysis of the Legislative History and on-going Interpretation of Article 24 of the UN Convention on the Rights of Persons with Disabilities (CRPD)." *Human Rights Quarterly*, 40(1), 37-60. doi: 10.1353/hrq.2018.000

⁵³ Kusters, M. 2017. "Intergenerational Responsibility in Deaf Pedagogies." In *Innovations in Deaf Studies: The Role of Deaf Scholars* edited by A. Kusters, M. De Meulder, and D. O'Brien, 241-262. New York: Oxford University Press.

⁵⁴ Par. 11 of the General Comment No. 4 (2016) on the Right to Inclusive Education states, "Segregation occurs when the education of students with disabilities is provided in separate environments designed or used to respond to a particular impairment or to various impairments, in isolation from students without disabilities."

teachers, who are themselves fluent in Auslan, by the provision of bilingual learning materials, and by opportunities to study Auslan as a school subject.

- A central issue for achieving quality inclusive education for deaf learners is the provision of teacher education that supports deaf candidates' achievement of teaching credentials, teachers' proficiency in Auslan, knowledge and development of quality bilingual curricula and pedagogy, and awareness of the need for high expectations for deaf learners as bilingual learners.
- 3. There is also a need for schools to support parent and deaf community engagement.
- 4. As described by several recent international studies, effective models of inclusive education for deaf learners include quality deaf schools which employ a high proportion of signing deaf teachers and administrators.
- 5. Deaf schools can also provide supports and resources to deaf learners enrolled in mainstream schools, including access to a signing peer group and to deaf teachers.
- 6. For deaf children living in rural areas, the role of deaf schools in supporting mainstream school environments may be especially crucial, as they can support distance learning and opportunities to attend a deaf school on a part-time basis.
- 7. Inclusive education for deaf learners can also include co-enrolment models where a team of deaf and hearing teachers provide simultaneous instruction in sign language and spoken language to classrooms of deaf and hearing students. A co-enrolment model may also involve the formation of a bilingual program for deaf learners in separate classrooms within a mainstream school. In these settings, it is important for non-deaf learners to also receive instruction in sign language.

Deaf Teachers & Teachers of the Deaf – a short note

In NSW there is a blatant attempt to remove all Deaf teachers from the education system with the NSW Department of Education. All people who study to become teachers, or change schools, are required to undergo assessments, which include hearing tests. Those who fail the hearing test (i.e., Deaf people) are disqualified from teaching and lose their license to teach.

There is a severe shortage of Teachers of the Deaf (TOD), reported by almost all educational institutions that Deaf Australia spoke with in preparing for this submission. It must also be noted that not many TODs can sign or are fluent in Auslan, which means the signing deaf child needs to accommodate the non-signing TOD.

Academic Performance

Academic performance is negatively impacted by linguistic neglect. Because access to consistent and frequent communication is necessary for language development, deaf children of hearing parents often begin language learning later than hearing children or deaf children of deaf parents. This is often tied to poor language skills that may inhibit learning in a classroom setting.⁵⁵ If deaf students enter school with poor language skills, instruction is compromised because attention and time must be devoted to learning language rather than material. These students also struggle with sustained attention, which is crucial to education and adequate academic performance.⁵⁶ This puts deaf

⁵⁵ Sandra J. Briggle, "Language and Literacy Development in Children Who Are Deaf or Hearing Impaired," Kappa Delta Pi Record 41, no. 2 (2005): 68–71, https://doi.org/10.1080/00228958.2005.10532047.

⁵⁶ Cristina Vaccari and Marc Marschark, "Communication between Parents and Deaf Children: Implications for Social-Emotional Development," Journal of Child Psychology and Psychiatry 38, no. 7 (1997): 793–801, https://doi.org/10.1111/j.1469-7610.1997.tb01597.x.

children 1–4 grade levels behind their hearing peers in school and often causes deaf students to fall behind hearing peers on number concepts, language skills, and problem-solving skills.^{57,58}

Though all deaf children who lack foundational language can struggle with sustained attention, signing deaf children do better academically than non-signing deaf children.⁵⁹ Deaf children's speaking abilities are not correlated with reading achievements; however, American trends indicate that higher ASL proficiency is tied with higher English literacy rates.⁶⁰ English performance is found to improve with even moderate-level ASL skills, and those with the highest ASL abilities achieve significantly higher English scores and literacy skills than those with minimal ASL abilities.⁶¹

Another issue occurs when teachers ask deaf children to lip read rather than providing them with proper linguistic input. When deaf students lip read, they can understand 40% of the information at most. When teachers speak while facing a whiteboard or moving around the classroom, or other students speak out of line of sight, deaf students cannot gather information through lip reading.⁶² These challenges have a negative effect on deaf students' ability to learn effectively. The average 16 year old deaf student has an 8 year old reading level and is 4 grades behind in math skills, exemplifying the impact linguistic neglect has on ability to learn.^{63,64}

There are significant gaps between graduation rates for hearing and deaf students. Deaf students graduate high school at a 6% lower rate than hearing students. Further, 12% fewer deaf students go on to attend university than hearing students.⁶⁵ Finally, 18% of deaf college students obtain a bachelor's degree while 33% of their hearing peers obtain a bachelor's degree.⁶⁶ Without the proper academic resources and accommodations, deaf children struggle to progress through collegiate and doctoral education and to become productive in the workforce.

A note about regional/rural areas

In these areas, finding interpreters is near impossible, let alone compatible and appropriate interpreters for any of the above settings. Often, interpreters have to travel from the nearest urban area, or the state's capital (i.e., Melbourne, Sydney), which adds a substantial cost to the overall accessibility of interpreters.

Journal of Deaf Studies and Deaf Education 2, no. 1 (January 1997): 37–46, https://doi.org/10.1093/oxfordjournals.deafed.a014308.

https://www.gettingsmart.com/2016/08/10-challenges-deaf-students-face-in-the-classroom/.

⁵⁷ Lisa Packer, "How Hearing Loss Impacts Child Development and School Performance," Healthy Hearing, Ohio University, September 12, 2018,

 $https://www.healthyhearing.com/report/52433-How-hearing-loss-affects-school-performance\ .$

⁵⁸ Marilyn Weber, "10 Challenges Deaf Students Face in the Classroom," Getting Smart, December 24, 2016,

 $https://www.gettingsmart.com/2016/08/10-challenges-deaf-students-face-in-the-classroom/\ .$

⁵⁹ Harlan L. Lane, The Mask of Benevolence: Disabling the Deaf Community (San Diego, CA: DawnSignPress, 1999).

 ⁶⁰ Harlan L. Lane, The Mask of Benevolence: Disabling the Deaf Community (San Diego, CA: DawnSignPress, 1999).
 ⁶¹ Michael Strong and Philip M. Prinz, "A Study of the Relationship Between American Sign Language and English Literacy,"

⁶² Marilyn Weber, "10 Challenges Deaf Students Face in the Classroom," Getting Smart, December 24, 2016,

⁶³ Harlan L. Lane, The Mask of Benevolence: Disabling the Deaf Community (San Diego, CA: DawnSignPress, 1999).

⁶⁴ Claire Ramsey, "Deaf Children in Public Schools: Placement, Context, and Consequences," Choice Reviews Online 35, no. 05 (January 1998), https://doi.org/10.5860/choice.35-2850.

⁶⁵ Carrie Garberoglio, Stephanie Cawthon, and Adam Sales, "Deaf People and Educational Attainment in the United States: 2017," National Deaf Center, 2017,

https://www.nationaldeafcenter.org/sites/default/files/DeafPeopleandEducational_Attainment_whit e_paper.pdf .

⁶⁶ Carrie Garberoglio, Stephanie Cawthon, and Adam Sales, "Deaf People and Educational Attainment in the United States: 2017," National Deaf Center, 2017,

 $https://www.nationaldeafcenter.org/sites/default/files/DeafPeopleandEducational_Attainment_white_paper.pdf .$

The introduction of Video Relay Interpreting (VRI) has helped matters somewhat, but it does not neatly replace the experience of having an interpreter in person, who can move with the flow and ebb of the room, hear other things happening, react to real-time, in-real-space events, or pick up on environmental factors. Additionally, watching an interpreter on a screen adds significant fatigue, on top of normal fatigue from watching interpreters in general⁶⁷. VRI also relies on reliable and consistent internet connection and being able to hear everything in the room as well as seeing the Deaf person.

⁶⁷ Hornsby BW, Werfel K, Camarata S, Bess FH. Subjective fatigue in children with hearing loss: some preliminary findings. Am J Audiol. 2014 Mar;23(1):129-34. doi: 10.1044/1059-0889(2013/13-0017). PMID: 23824428; PMCID: PMC4096811.