

A Research Project Proposal for Measuring How SRAs with Bilingual
ASL/English Ebooks Teach Deaf Children Storytelling Conventions

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Abstract

Deaf children, and especially deaf children of hearing parents, are at great disadvantage when it comes to language learning. This becomes even more salient when it is looked at in terms of more poetic language, which is constantly pushed to the bottom of the list of priorities in favor of putting the focus on English language education. There is plenty of research on how deaf children learn English vocabulary and reading comprehension, but very little on how they learn ASL, and virtually nothing on the learning of literary devices in ASL. Combining with and possibly stemming from this problem is the lack of ‘fun’ in reading materials recommended for hearing parents and deaf children to share together. To investigate how to remedy this problem, a two-fold study proposal is suggested: studying what shared reading materials can be engaging, educational, and mutually intelligible between hearing parents and deaf children, and a study of how this could affect the development of storytelling devices in deaf children.

We conclude that bimodal bilingual ebooks with elements beyond the didactic are the most advantageous materials to use in this experiment proposal, specifically citing VL2’s *The Baobab* and Adam Stone’s *Pointy Three*. In order to evaluate the level of involvement in each storytelling event analyzed, several measures have been created—one from Sipe (2008)’s model categorizing children’s reactions to literature, one of story-telling conventions, and one of the story-telling strategies observed in Deaf parent-child dyads by Lartz & Lestina (1995), as well as two original sets of questions evaluating development of involvedness in a Shared Reading Activity (SRA) over time and evaluating how suitable a language learning material is for an SRA in a hearing parent-deaf child dyad.

I. INTRODUCTION

The overwhelming majority of existing articles studying how deaf children learn evaluate whether deaf children are being taught English reading proficiency well enough. Some of these studies show that all deaf children perform at a significantly lower level than hearing children, up to seven grade levels below that of their hearing peers (Mayer 2007, Traxler 2000), while others take a more nuanced look at the factors affecting the language acquisition of deaf children. These more intensive studies separate the English-language performance of deaf children of deaf parents from deaf children of hearing parents, and through this conclude that deaf children of deaf parents perform much more closely to hearing children of the same cohort (Marschak, Lang, & Albertini, 2002). The question of how these two groups of deaf children compare in regards to sign language mastery is underexplored. Considering that deaf children are unlikely and often unable to clearly and easily process languages in a spoken modality, and that hearing adults are very rarely fluent in any language in a manual modality, deaf children of hearing parents are at an extreme disadvantage in comparison to children raised in sign bilingual homes in terms of both spoken and sign language mastery. Deaf children of hearing parents often graduate high school with a fourth grade reading level, seven years behind their peers who are hearing or Deaf children of Deaf parents (Traxler 2000).

Many modern hearing adults are dismissive of sign languages. This can largely be attributed to widespread misconceptions categorizing sign languages as either 1:1 translations of spoken languages or else simple miming without its own syntax, as well as to misconceptions regarding the recent advancement of cochlear implants. Cochlear implants are especially harmful to perceptions of sign language because they are often viewed from people who take a medical perspective of deafness as its cure. These views are fallacious. Even with a functional cochlear

implant, fluency in a sign language is advantageous for a deaf child. In his widely-supported proposal *The Right of the Deaf Child to Grow Up Bilingual*, Francois Grosjean advocates that all deaf children be taught both a spoken language and a sign language, arguing that “One never regrets knowing several languages, but one certainly regrets not knowing enough” (Grosjean 2001, 2). Grosjean and his contemporaries argue that teaching a child a sign language as soon as they are identified as deaf allows them to engage with the world and begin learning language at an earlier age than when a child is limited to spoken language (Grosjean 2001, 3, Humphries et al. 2014). He states that the child’s spoken language will allow them professional and educational success, but that the sign language will be used for communication and for the guarantee of language mastery in at least one modality (Grosjean 2001, 2).

According to many studies, fluency in a sign language helps rather than hurts later acquisition of spoken language when compared to acquisition of no language at all (Humphries et al. 2014, Goldin-Meadow & Mayberry 2001, Kushalnagar et al. 2011). In the most extreme cases, linguistic impoverishment can leave a child with no real language model even in adulthood. Research on home signers in Nicaragua has shown that language impoverishment does not only affect communication, but also affects other cognitive processes, most notably number systems. Adults raised without formal language are virtually never able to mentally represent quantities larger than 4 (Spaepen et al 2011). These far-reaching effects on the cognitive system must be avoided.

Bilingual ASL/English storybooks for deaf children are both useful tools for increasing a deaf child’s language education and, if done in a way that captures a child’s interest while simultaneously fostering a deaf child’s learning, tools to expose a child to Deaf culture. According to many studies of diversity and representation in children’s literature, when created

by and for members of the Deaf community, the sign language components of a bilingual story should foster the child's English learning (through giving the child a sign-language interpretation of the written word) and ASL vocabulary learning, and show them traditionally Deaf narratives and storytelling techniques (Appleyard 1991, Brittain 2004, Bahan 2006, Sutton-Spence 2010). Deaf children of hearing parents have a limited exposure to storytelling for storytelling's sake, in stark contrast to hearing children, who are more easily able to grow their artistic and formal language mastery at the same time. Ben Bahan (2006) states that 'smooth signers' (a name for uncommonly masterful deaf signers who are often called upon to tell stories and frequently become community storytellers) become such through the combination of repeated exposure to the work of skilled ASL storytellers *and* innate skill rather than through innate skill alone. Deaf children, then, should be exposed to ASL storytelling in order to allow them to reach their full potential to interact with language and with Deaf culture. However, there has been little if any research on how deaf children can learn ASL storytelling through bilingual language media.

To this end, the following paper proposes a research project that could qualitatively measure how the language mastery of deaf children of hearing parents develops with the aid of ASL/English storytelling and language-learning materials. Specifically, this research project could test how shared reading activities (SRAs) of different types of bilingual ebooks created by culturally Deaf people and for deaf children of hearing parents can foster (1) language learning, (2) parental involvement and engagement, and (3) ASL storytelling abilities in these children.

II. PREVIOUS RESEARCH

2.1 Language Acquisition and Narrative Development in Deaf Children

Deaf children of hearing parents are at an extreme disadvantage regarding language development in comparison to their peers. In general, hearing people know very little about

D/deafness, and so their deaf children are not given adequate exposure to the Deaf community or to a language learning style that caters to them. While children have astounding capabilities for language acquisition, proficiency in a first language, manual or spoken, must occur before the critical period for language learning (usually at five years of age) in order to avoid linguistic impoverishment (Kushalnagar et. al. 2011). To be certain that a deaf child is able to learn a language, many sources advocate early detection and screening for deafness and early education in sign language. However, because the world tends to run based on the experiences and abilities of hearing people, deaf children must also learn a spoken language in order to have a wider range of career prospects and more access to education (Kushalnagar et. al. 2011, Grosjean 2000). In fact, speech-reading and spoken-word vocabulary size in deaf children is correlated with skill in reading comprehension, which is necessary for any analysis of written information—a skill pivotal to most high-level jobs (Kyle, Campbell, & MacSweeney 2015).

Deaf and hearing children’s language development, when they are each exposed to a language in the modality best for them, occurs in analogous steps--and this occurs at every age of the language learning process. An oft-cited example of this is that during the same language development stage when hearing children are babbling vocally, deaf children are babbling manually (Cormier, Mauk, & Rep 1998). With these matching milestones, narrative development should also be parallel between hearing and deaf children. This is an under-researched aspect of deaf studies, though there is some evidence that deaf children who learn a sign language early perform more similarly to their hearing peers in this aspect than deaf children who learn a sign language later in life. The older the deaf child is when they first learn a sign language, the more tenuous their grasp on storytelling is (Rathmann, Mann, & Morgan, 2007).

There is, however, evidence of very young children using narrative structure and storytelling conventions in ASL in the form of publicly-available online videos. Two of these videos are “Travis and the Caterpillar ASL”, signed by Travis Brown, and “ASL Nook - The Night Before Christmas in ASL”, signed by Shaylee McFeely. Both of these videos are freely available under those titles on YouTube. While these videos are based on widely-known stories, each child has made the story their own. Both children are four years old, native ASL signers, and interact personally with the story they are telling.

Travis’s video begins with a note from his parents, informing the viewer that Travis is telling his favorite part from *The Very Hungry Caterpillar* by Erik Carle. In this video, Travis describes how the caterpillar became very fat; he employs embodiment (using one’s entire body to represent an actor in the story) via the non-manual device of puffing up his cheeks to further describe the event. He also uses a sign transformation to describe the metamorphosis of the caterpillar to a butterfly, smoothly transitioning the sign CATERPILLAR into the sign BUTTERFLY.



Fig 1.

Fig 2.

Fig 3.

Figs. 1-3: Travis begins embodying the caterpillar, showing the creature before the puffing-up-in-size event (Fig 1). The next figure shows how widely Travis moves his arms apart, and the nonmanual marker of puffing up his cheeks. This movement is rapid and explosive (Fig 2), with a come-down and pause in place for emphasis following the culmination of the sign (Fig 3.). (Brown & Brown, 2013).



Fig 4.

Fig 5.

Fig 6.

Fig 7.

Fig 8.

Figs. 4-8: This sign transformation begins at the end of the sign CATERPILLAR, which Travis signs by inching a 1-handshape all the way across his arm (Fig 4). From there, he crosses his wrists over one another (Fig 5) and quickly flips them upwards (Fig 6), and then rotates his wrists so his palm orientation is inwards (Fig 7). This results in the sign BUTTERFLY (Fig 8). (Brown & Brown, 2013).

Shaylee’s video is more formal and longer than Travis’s, and therefore has more material. While the entire video is worth more discussion, an especially interesting segment occurs from 1:50-2:00. This segment begins with Shaylee describing an ‘old man’. However, the sign she uses for OLD is significantly lengthened compared to the original sign, with three leftward and rightward bends in the movement from the chin downwards. This is an artistic exaggeration which creates a sign that means, more than just being old, this man is absolutely ancient.



Fig 9.

Fig 10.

Fig 11.



Fig 12.

Fig 13.

Figs. 9-13: Compare Shaylee’s exaggerated OLD (Figs 9-11) with the unmarked OLD (Figs 12-13). Notice Shaylee’s use of nonmanuals in the O mouthshape (Fig 9), and the optional bend in Figure 10 lengthening the sign to an extreme degree (McFeely, 2013). Now compare this to unmarked OLD, which does not use nonmanuals and is a simple, short motion downwards (Figs 12-13). (OLD, Signing Savvy).

Another interesting moment follows this one. The old man is (unsurprisingly) revealed to be Santa. In this moment, Shaylee moves from impartial narrator to active participant in the narrative, artfully changing perspective to sign the excitement of seeing Santa by embodying herself in that position. She signs I KNOW WHO - SANTA!, with the final utterance being represented by her jumping movement upwards and left-and-right, and enthusiastically mouthing Santa’s name.



Fig 14.

Fig 15.

Fig 16.

Figs. 14-16: In this segment, Shaylee makes her emotional connection to the story very clear. She is very active, looking around rapidly and jumping slightly in her seat, and note the exaggeratedness of mouthing of the [æ] (Fig 15) and [ə] (Fig 16) in Santa’s name.(McFeely 2013).

These videos show that there is evidence that a deaf child can begin learning and actively using sign language storytelling conventions at as early as four years old. It must be noted that these children are in extraordinary situations, both of whom have at least one Deaf parent and families who are fluent in sign language. There has not yet been enough research on this subject to say whether this level of signing is extraordinary at this age, or if this is an achievable degree of success for any child given sufficient preparation in a sign language. That said, there is no reason to suspect that this level of language proficiency is any more unusual for a deaf child with a strong first-language foundation than it is for a hearing child with a strong first-language foundation.

2.2 Shared Reading Events and Their Effects on Language Learning

In a SRA, a parent-child dyad goes beyond simply reading a book. Rather, the parent and child have an interaction based on the book; asking questions, sharing information, and truly engaging with the story (Berke 2013, Napoli & Mirus forthcoming). SRAs are shown to increase language ability and reading comprehension in both hearing and Deaf children (Berke 2013). The difference between the simple act of reading a book and an SRA, then, is the contingent interaction of parent and child. As categorized by Roseberry, Hirsh-Pasek, and Golinkoff (2014), in this study the term *contingent* refers to an unbroken, involved interaction between parent and child featuring active back-and-forth feedback, contrasting with the non-contingent interaction of, for example, a TV show that gives the child time to respond. Two-way, contingent interactions are shown to be more advantageous in teaching a child novel vocabulary than one-way interactions such as video or reading a book without embedded exchanges (Roseberry, Hirsh-Pasek, & Golinkoff, 2014).

It can be difficult to quantify a contingent interaction, given that attention and involvement are in theory invisible inward states. What is observable is the child's reaction to events, and the parent's involvement, and so these two signifiers must be turned into measures of contingency in an SRA. According to Sipe (2008), a child's participation in and reaction to an SRA can be classified into three groups and five main subcategories. Sipe's model designates these categories as *analytical*, *intertextual*, *personal*, *performative*, and *transparent*. Analytical reactions are the most common and the least complex, in which children simply restate events conveyed through text and illustration. These reactions show that the child has been listening enough to understand basic story elements.

The other four types of responses, while less frequent, are also more transparent, showing an active response and involvement beyond simple attention. The next most common type of response is the inter-textual response, in which a child forms a critical response to the narrative by relating it to other stories they have read or watched on television, in books, on the radio, and occasionally stories they and their peers have written themselves, often in a classroom setting. These responses actively relate the story the child is currently consuming to another story, demonstrating the application of multiple levels of thinking to the narrative.

The personal response is similar to the inter-textual response, but shows that the child is able to relate a story not only to fictional and written happenings, but also to their own lived experience. In these responses, a child will process a story by taking its underlying meaning into account and synthesizing it to apply to their life. In the most salient of these reactions, a child will take a story's implicit message or allegorical moral and apply it critically to their own problems and life events they are currently facing. For example, if a child were to read a book about a dog working hard to learn a new trick, and the child reacted by saying that they should

work hard if they want to start becoming a better player for their soccer team, the child would be having a deep personal response.

Children can also formulate performative responses. The performative response occurs when a child takes certain elements of the narrative and actively changes or works with them to create something new. These hypothetical what-ifs give the child ownership of the creative process and the narrative. In these responses, a child can change the setting of a story to be more familiar, heighten or lower the tone, or even create situations that they find humorous using some element of the story. These responses can be caught fleetingly during the event, but more in-depth versions such as crafting an entire alternate version of the story may not be shown during the storytelling event. This is not a deficit—there are still smaller indicators of this category of thinking which do occur during pauses in storytelling, and the interactions during storytelling are given highest priority for this proposal.

Finally, there are transparent responses. In the transparent response, the child reacts as if the story is happening directly to them. These interactions show that a child is fully immersed in the storytelling, and that they are responding to the story as a transformative experience rather than a simple listening event (Sipe 2008).

Some cues of these responses occurring in deaf children are the way that they sign as they respond. Depending on a child's level of signing proficiency, they can use signs in a way that show how they are relating to the narrative. Often used by expert sign-language story-tellers, storytelling conventions in sign languages are used to interact with stories in a way that is more personal than simple signing. If a child were to use these conventions on their own, it would show that they understood the story and were making inferences. In short, storytelling

conventions are used to interact with and tell a story in a more nuanced and stylistic way, as detailed below.

The storytelling conventions that are possibly relevant to these interactions are as follows:

- *Pause*: Does the signer pause before key phrases?
- *Eye gaze*: Does the signer use eye gaze to follow an actor, or to connect one sign to another?
- *Role shifting*: Does the signer use role shift between characters?
- *Embodiment*: Does the signer use their own body to represent an actor in the story?
- *Simultaneity*: Does the signer ever express two concepts at the same time (bimanually or by using facial expression and other non-manuals)?
- *Classifier handshapes*: Does the signer use classifier handshapes corresponding to some argument(s) of the predicate??
- *Transformation*: Are there instances in which one sign gradually transitions into another?
- *Grammar*: Is the signer using ASL grammar, or direct English translation?
 - (criterion inspired by Cook, Giacomucci, & Nilsson 2013, Beal-Alvarez & Trussell 2015)

Pause and eye gaze would denote that the signer understood the significance of the events in the story, thus pointing towards an analytical interpretation. Role shifting and embodiment require signers to physically represent the actor themselves, pointing to a transparent response. The use of simultaneity, classifier handshapes, and transformations are more performative-- unless they are simply parroting a demonstrated sign, the child is taking the story and re-interpreting it with their own creative spin. Intertextual and personal responses are always

implicit rather than explicit, and thus cannot be quantified using these criteria. It must be noted that these devices could be inaccessible to very young children who were not raised signing. Nonetheless, if these storytelling devices were to be used, they could each be placed into a different category of reaction to the text.

A parent can help to elicit these more creative responses with story-based questions that encourage a child to consider the events of a story through their own prism of experience (ex. “Would you be nervous on your first day of school like Marvin was?”). These *distancing prompts*, called such because they create distance between the child’s life and the story while simultaneously bridging them together on a deeper level, can be used as a measure of parental involvement, and a child’s response can in turn be used to measure their involvement (Parrish-Morris et. al. 2013). This is not to imply that a parent who does not use distancing prompts is not an active participant in a reading activity; however, a parent who uses distancing prompts frequently is clearly fully immersed in the activity. Likewise, a child who only shows analytical responses--or even no response at all--may still be very interested in the story, but it is unequivocally certain that a child that frequently shows many different kinds of reactions to the narrative is immersed in the activity of reading.

Another signifier of a shared reading activity on the part of the parent would be child-directed speech. When using child-directed speech, an adult’s speech is rendered simpler to understand by new language learners, and can include a register change to what many term ‘baby talk’, or ‘motherese’, which lengthens sounds, creates segmentation at word boundaries, and uses simpler sentence structure than natural speech (Hirsh-Pasek et. al. 1987). In ASL, this would include adding path to signs, increased segmentation between signs, and longer duration of

motion (Meier 2008, Holzrichter & Meier 2000). If this is shown, then the parent is clearly intuiting the best way to share language with their child.

For deaf children and their parents, shared reading events occurring over bimodal-bilingual ebooks or similar forms of mixed media allow more meaningful interactions than with monomodal and monolingual media. Unfortunately, many studies that do not bring deaf children and families into consideration deride ebooks as detrimental to the learning experience. A common critique of ebooks and other media that combine a story with interactive electronic components is that they reduce opportunities for shared reading activities. Ebooks, the argument goes, replace distancing prompts with behavior-related speech (Parrish-Morris et. al. 2013). However, these studies tend to look solely at ebooks made for hearing children, which tend to have superfluous features that would be more distracting than helpful for both deaf and hearing children. Conversely, interactive features in ebooks for deaf children tend to be limited to sign language videos, which do not distract from but rather coexist with the written narrative.

Moreover, some factors that would be considered excessive or distracting in stories for hearing children are necessary in stories for deaf children. The most obvious of these are moving parts; ASL must be in motion to be understood. There are some exceptions to this rule, which will be discussed in section III, but it can be said with a strong degree of confidence that stationary depictions of signs must be created in incredible detail to be clearly and accurately comprehensible to anyone who has not already been exposed to sign—and even for experienced signers, a picture is never as easily and immediately understood as a video.

That said, an emphasis on visually arresting illustrations is generally good practice in making materials for deaf children. Studies have shown that deaf children are significantly better at learning from multimedia materials than from print alone (Gentry et al 2005). It has been

found that ebooks are especially helpful to the language learning of deaf children because they are visually interesting. Additionally, they allow hearing parents of deaf children to become more confident when engaging in SRAs than with monomodal monolingual materials without entirely removing the necessity of the parent's presence (Mueller & Hurtig 2010).

SRAs are vital for deaf children of hearing parents because they necessitate the active involvement of the parent. In general and especially for deaf children, parental involvement is a strong predictor for academic achievement (Calderon 2000). The effects of parental involvement on deaf children are slightly more complex than those on hearing children. While for both groups parental involvement correlates with higher economic status and more time for meaningful interaction, for deaf children more parental interaction suggests that the deaf parent and child are able to communicate effectively—something virtually guaranteed to the hearing child, as well as to deaf children of deaf parents.

It is helpful to model ideal interactions with young deaf children after SRAs with deaf children of deaf parents. These interactions increase the likelihood that the SRA will be done with an eye towards meeting the needs of a deaf child. Lartz & Lestina (1995) found six main tactics that were individual to deaf mothers reading with deaf children. Two of these of these overlap with hallmarks of SRAs (distancing prompts and other ways of relating events of a story to a child's life) or stylistic markers of ASL storytelling (role shifting). The four remaining strategies are *sign placement*, the signing of key words or phrases directly on the text or using the book as part of the sign; *text paired with signed demonstration* to draw attention to a written word and its accompanying sign; *attention maintenance* to ensure the child is paying attention to the signing and the text; and *non-manual signals as questions*, the use of facial markers to ask questions about the events of the story (Lartz & Lestina 1995). If a hearing parent were to exhibit

these behaviors during a bilingual SRA, it would show that they had gained a very strong understanding of how to convey information to their child through a type of osmosis. While some of these factors, such as non-manuals, are taught in ASL classes, in beginners classes they are normally only taught in reference to grammatical constructions and when they are included in a specific sign. If these non-manuals are used in an individually meaningful manner, rather than perfunctorily, they will satisfy the requirements to be considered under these criteria.

All of this analysis of course requires that parents have the ability to spend time reading with their child. Vocabulary size and communicative competence in a hearing child's language or dialect strongly increase with the amount of time they spend in meaningful interactions with a high ratio of encouragements to discouragements, that ratio being approximately six encouragements to one discouragement (Hart & Risley 1995, Heath 1982). Fostering more interactions, particularly ones with communication integrated into play or other entertainment-type activities, between hearing parents and deaf children, then, is made all the more important.

2.3 The Deaf Child's Right to Deafhood

Another reason to promote the shared use of a sign language and a spoken language is to provide access to Deaf culture and the language of Deafhood that can only be gained through the manual modality. Deafhood, a term coined by Paddy Ladd in 2003, is the cultural aspect of deafness, or the parts of deafness that remain when the medical model is excised from the narrative of deafness. The role of Deafhood is to preserve Deaf traditions and history while simultaneously being used as a tool against deaf oppression in a hearing world (Ladd & Lane 2013). Within Deafhood, there is a thriving artistic and narrative tradition. Some examples of this are Deaf theater groups such as LA's Deaf West, numerous sign language poets such as Clayton Valli and Ella Mae Lentz, and sign language storytellers like Dorothy Miles and Ben Bahan.

It should be noted that Deaf communities from different locations and traditions have different ideas of what classifies Deafhood (Ladd & Lane 2013). Keeping in mind the scarcity of traditionally Deaf narratives in popular culture, however, deaf children of hearing parents have little idea of this and are unable to form a cultural identity of Deafness. Exposure of deaf children to other d/Deaf people, stories, and folklore has been anecdotally shown to have positive effects on confidence, identity, and willingness to learn, overriding many learning anxieties common to the deaf (Sutton-Spence 2010).

Deaf children must be given a chance to be made a part of the Deaf community even if—especially if—they live solely among hearing people. Deaf children must have role models and narratives for and about them in order to gain a sense of cultural identity. Affiliation and familiarity with Deafhood correlates with higher levels of self-confidence in deaf children (Sutton-Spence 2010, Bahan 2006). Literature and stories by Deaf individuals provide a valuable link to Deafhood and Deaf narratives that would otherwise be denied to deaf children of hearing parents. These children are put in a position where they are seen as having a deficit; the early media to which they are exposed should be telling them otherwise. Seeing a Deaf storyteller enacting a narrative about Deafness, in subject if not explicitly, shows them that they exist in this world, and that there is nothing wrong with their existence. Moreover, being given these narratives may inspire them to take part in the Deaf literary tradition themselves, using and expanding upon Deaf storytelling markers. When more literate or stylistic forms of language are repeatedly modeled for children, children become more adept in using the visual vernacular themselves. (Bahan 2006).

2.4 Representation in Children's Literature

Interesting, personally relevant stories may strengthen a child's desire to learn to use written English as well by creating an interest in storytelling and reading, paving the way for deaf children to attain two languages at a very young age. According to St. Amour (2003), the use of diverse reading materials in classrooms can act as a "cultural mirror" for students in marginalized groups, increasing their motivation to engage with these books by providing content that is relevant to their life experiences in the way that most literature is not (St. Amour 2003 50).

Picture books are also important to a child's sense of identity. From as early as the ages of 3 to five years old, children begin forming a sense of self and creating ideologies of gender, race, sexuality, ability, and more. Negative influences of stereotypes about deafness will begin affecting a child during this period, but this can be counteracted by facilitating the consumption of media that creates positive role models and cultural identity in a child (Golos & Moses 2013). Picture books are the most widely distributed material for children's consumption in the time period during the most vulnerable period for creation of self-identity, so the reading materials created for and presented to children in that period should help foster positive self-conception. Deaf ebooks always feature a prominent signer as narrator, showing a child that there are people like them out there who are featured in books and who are storytellers. This allows them to create positive associations with their deaf identity, and provides early insight into deaf culture that would otherwise be severely lacking.

III. OVERVIEW OF MATERIALS

The bare minimum needed to designate language learning materials for deaf children as 'successful' is the ability to both impart language skills to and entertain a child. However, this

project does not focus on the bare minimum of giving deaf children the same things hearing children are guaranteed and nothing more. As such, for the sake of this experiment proposal materials are chosen based on the following criteria:

- *Teachability*: Can this material teach deaf children language? That is to say, does this material help to facilitate improved reading comprehension skills in English and advanced signing skills in ASL?
- *Child Interest Level*: Is it engaging to deaf children? Are Deaf children able to follow the narrative and retain interest in the material being presented to them? Does it comply with Appleyard's (2008) classification of children aged 2-6 as 'the reader as player', in which the child does not yet read themselves but does listen to stories and engage with them as a character of this literary tale?
- *Parental Engagement*: Is it engaging to hearing parents? Are hearing parents willing and able to participate in the storytelling in a way that is meaningful and fosters contingency with their child?
- *Linguistic Accessibility*: Is it clear and understandable in both English and ASL?
- *Narrative Accessibility*: Is it made by members of the Deaf community for a deaf audience?
- *Richness of Storytelling*: Does it prominently feature rich ASL storytelling markers?

Using these criteria, two ebooks have been chosen for this experiment. The first, written by Melissa Malzkuhn, Dr. Kristen Harmon, Dr. Benjamin Bahan, and Wanda Riddle, and performed by April Jackson-Woodard, is *The Baobab*. This ebook was created by Gallaudet's VL2 storybook apps program, which seeks to make bilingual ebooks more accessible to deaf children

by making them available as apps on iPad and Android devices. VL2 ebooks are created with the express purpose of deaf education, and are often used in a classroom context. The team of story writers and the storyteller are all deaf individuals with ties to Gallaudet. The ebook has colorful watercolor illustrations and a novel story, and interspersed with more storytelling-based signs are moments where the signer fingerspells a particular word to create a connection between a sign and the written English-language vocabulary (Visual Language and Visual Learning, Gallaudet University 2012).



Fig 17. A screengrab from *The Baobab* (from website). Note the illustrations and bolded text, creating more visual interest. The signing window must be engaged by the reader to appear. (Visual Language and Visual Learning, Gallaudet University 2012).

To contrast with this, another language material that is not made with educational purposes at the forefront will be used. *Pointy Three* is written by Adam Stone, a Deaf man, and performed by Lauren Ridloff. The story is moralistic, putting forward the moral that being different does not imply that one is defective, mirroring the perceptions of deafness by deaf

people (cultural Deafhood) and hearing people (medical deafness). *Pointy Three*, then, is quite noticeably a Deaf narrative, translating issues of Deaf culture into reflections of what a deaf child experiences. While Deaf creators must necessarily create stories from the perspective of Deafness, the connection is more salient in *Pointy Three* than in *The Baobab*, which is more about exploration and following the protagonist's hijinks. On a visual level, *Pointy Three* is less rich than *The Baobab*—the illustrations float in white space sans background. This difference can likely be attributed to the fact that *Pointy Three* was produced via iBooks. This allowed Stone to demonstrate that an interesting story for deaf children needn't be produced professionally (Lefebvre 2012).

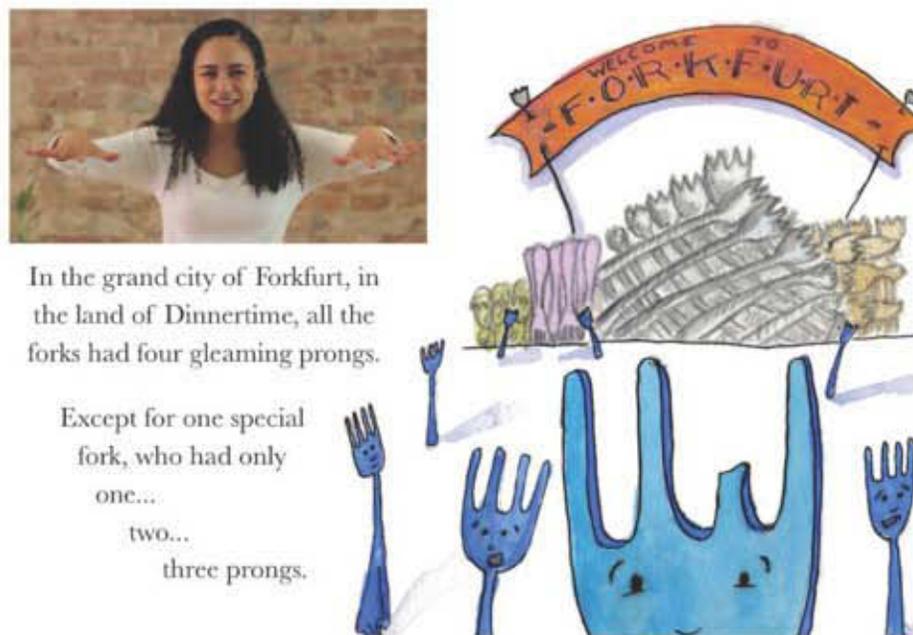


Fig 18. A screengrab from *Pointy Three* (from website). Note the effect of the white space behind the illustrations. In this ebook, the signing window is already present when the reader turns to the page (Stone 2012).

Ideally, to create a full range of different reading materials, this study would also include a third type of Deaf ebook which would be made purely for fun. A popular storytelling technique in Deaf culture are ABC and 123 stories, which are short signed stories that use the ASL

phonetic system to create narratives that are created specifically to use signs made only of the handshapes of the ASL alphabet or number system in sequential order. These stories are pure sign play; while the narratives themselves are often interesting and always coherent, the draw comes from the innovative ways storytellers use signs to spin a yarn without ever breaking the sequence. An example of a 1-2-3 Story is pictured in Figures 19-29.



Fig 19. 1 handshape
ALONE

Fig 20. 2 handshape
LOOKING-
AROUND

Fig 21. 3 handshape
WALKING
(modified)

Fig 22. 4 handshape
TREES (in wind)



Fig 23. 5 handshape
NERVOUS

Fig 24. 5 handshape
NERVOUS (cont.)

Fig 25. 6 handshape
SWEATING

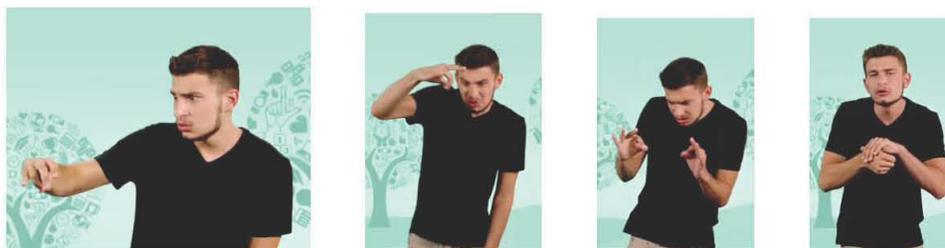


Fig 26. 7 handshape
CRAWLING-THING

Fig 27. 8 handshape
PICK-UP
(something
distasteful)

Fig 28. 9 handshape
LOOK-AT

Fig 29. 10 handshape
TURTLE

Figs. 17-27: This number story is translated in the video as: “Alone, looking and walking along as the wind blows through the trees. Nervous and sweating as something is crawling along. Pick it up, but nervously drop it. I look down to find out it’s a turtle.” (Sorenson Communications 2015).

At the time of the writing of this paper, there are no ASL ABC or 123 stories available in ebook form; however, some examples are pictured in figures 19-29, and it is strongly suggested that if one is made available in ebook form in the near future, it should be included in this study. The addition of a third type of ebook would also provide the advantage of making it more simple for the parent and child to find an ebook that suits both of their tastes and is accessible linguistically for both of them. This can provide a situation in which it is more likely for the parent-child dyad to have meaningful interactions (Robertson & Reese 2015).

This paper by no means is intended to imply that ebooks are the only worthwhile materials for deaf story sharing. In fact, there are many materials other than ebook that are excellent for deaf children regarding narrative, delivery, and potential for parental engagement. However, these alternate materials--picture books with accompanying DVDs, videos of ASL stories with accompanying English subtitles, picture books or comics with ASL illustrations, etc.--each have significant drawback that make them difficult to use in a study intended to monitor SRAs in a parent-child dyad.

One of these alternate materials *Have You Ever Seen...?*, a storybook with an accompanying DVD. This picture book and video combination was created by ASL Rose, a now-dissolved company which created several books in this format. This structure is shared by many deaf storybooks created after the widespread availability of video players but before the invention and widespread distribution of ebooks. *Have You Ever Seen...?* is a novel material because contains a series of stories and sentences using one ASL handshape (i.e. “Have you ever seen an elephant cooking?”, which uses all B-handshapes), much like an ABC story. The English text is accordingly less ‘literary’ than the accompanying ASL, in that the repetition cannot be

replicated in this alternate modality. However, there are several factors that make storybooks with accompanying DVDs or videos less convenient than ebooks. Firstly, it is less convenient to set up a DVD and sync it with the pace of storybook reading; stalls and preamble are very distracting. More importantly, the written story and the sign story are displayed in two very different places, meaning that a child's attention is divided between the two. This is distracting anyone, especially the very young child, and could obfuscate both language learning and testability.

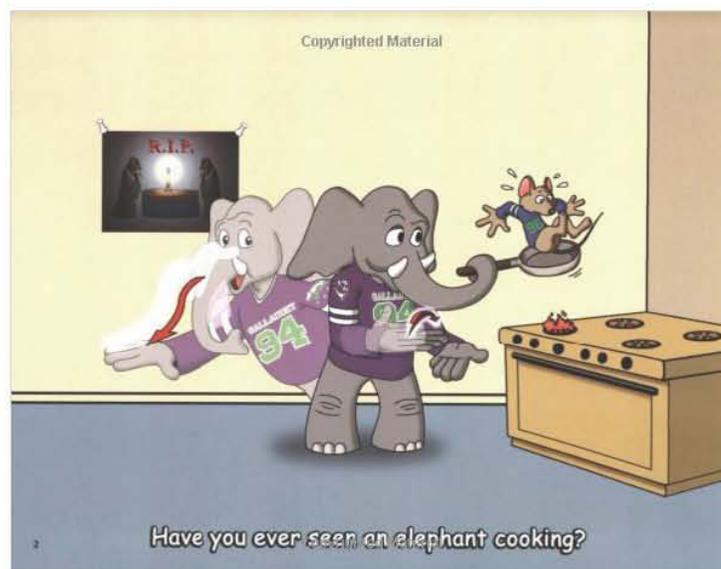


Fig 30. One of the short handshape stories from ASL Rose's *Have You Ever Seen...?*. Both the sign ELEPHANT (left) and the sign COOK (right) use the B handshape (Smith & Jacobowitz 2006)

Another notable type of language learning material is pure video ASL stories, usually done by a notable ASL storyteller, such as in Keith Wann's and Peter Cook's ASLStory app. These stories are very much an ASL storytelling experience, in that the English translation—displayed in subtitles below the signer—conveys far less information than the signing does, even for a non-signer. These videos and others like them are rich and entertaining, and rife with storytelling markers. They are also not interactive in any sense. A parent and child cannot watch

these videos and pause to ask the questions indicative of an SRA without disrupting the experience of watching the video.

A third class of material that is not conducive to this type of experimentation is the storybook or comic with detailed ASL illustrations. Two that immediately come to mind are the Moses series by Isaac Millman, a series of picture books in English featuring ASL ‘illustrations’, and (for older readers), issue #21 of Matt Fraction’s *Hawkeye*, a comic book that is almost entirely in sign. These books create recognizable signs in a paper format by making the illustrations of signs the largest words on the page, drawing attention to the handshape, hand orientation, and placement. However, it is always difficult to convey motion on paper, and it is impossible to check and make sure that is the correct sign without checking with a fluent signer or with an ASL dictionary, which can be subject to dialect differences. If a parent is not able to understand and create the signs themselves, the paper representations will not be interesting to the child reading with their parents.

IV. OUTLINE FOR RESEARCH

5.1. Methods

This study will be conducted on deaf children of hearing parents, because, as discussed previously, they are the group most at-risk. In order to ensure that this study is conducted prior to the onset of the critical period, but after a child is able to begin engaging with language, participants should be aged 2;0 to 3;6 years old. This will be a year-long longitudinal study so that development can be tracked over time.

In the test group, parents will be asked add the materials mentioned above to their regular rotation of shared reading materials. The parent will be asked to film any shared reading activity done using bilingual-bimodal materials suggested and send it to the researchers whenever it

occurs, along with the date and the name of the book. Reading with other materials will not be discouraged; it must be stressed that any kind of shared reading is better than no shared reading. There will be a questionnaire set out asking parents to choose what other types of reading materials they share with their child, if any. If feasible and convenient, the parent-child dyad will be asked to come to the lab quarterly to be filmed in an SRA in a controlled environment; however, if this is not feasible or convenient, it needn't apply. Regardless of whether the consultants are brought back to the lab, they should fill out a quarterly self-assessment designed to measure changes in their and their child's approaches to SRAs. Some example questions for this questionnaire include:

- Do you feel confident or comfortable signing with your child? In general?
- Does your child sign in response to you? How frequently?
- Does your child initiate sign language interactions? How often?
- Roughly what percentage of your interactions with your child are in sign?
- Do you and your child have long back-and-forth interactions in sign without having to switch to another mode of communication?
- Does your child frequently ask and answer complex questions about the stories you read together?
- Does your child frequently tell you stories (fictional or based in reality)?

Note that the final two of these questions do not mention sign language at all. This is because the issue in question here is not only use of sign language, but the amount of involvement in the SRA regardless of the language used. It does not matter what language or modality is used for communication—it could be all speech, all sign, all gesture, or any mixture of the three, so long as the child is engaging with the activity. These questions should be set up so that they can be

answered on a scale of one to ten, so that increases or decreases in any answers over time can be taken into account during the collection of data.

The control group will be treated similarly to the test group. They will not be given a list of suggested materials and will simply be asked to read with their child as they would normally and film it. All other parts of the study would remain consistent with the test group.

5.2. Criteria for evaluation of collected data

The data will be searched for several factors: use of ASL storytelling conventions, especially those present in the stories suggested, any reactions on the part of the child that can be categorized by Sipe's criteria as *analytical, intertextual, personal, performative, or transparent*, parental use of distancing prompts, and parental use of Lartz & Lestina's story-telling strategies (*sign placement, sign demonstration, attention maintenance, non-manuals, distancing prompts/relating to the child's life, and role shifting*). There will also be a final self-evaluation completed by the parents about their attitudes and their child's attitudes during SRAs.

All of the items that can be measured in the video will be noted two ways--number of occurrences of the event, and length (in seconds) of the event for each participant. It is necessary to record these interactions in two ways because neither one of those measures will show a full, accurate picture of the situation on their own. The number of occurrences will show the range of different markers of shared reading events, but this will not show how much of the reading was spent with parent and child in contingent interaction. Inversely, cumulative measures will show how much of the SRA was spent in contingent interaction, but it will not show how many separate events occurred. Therefore, both measures must be taken during the analysis phase.

V. CONCLUSION

The possible results and further applications of this experiment are manifold. They could be used to create recommendations for parents and caretakers of d/Deaf children, as well as doctors and teachers who advise parents of deaf children about language choices in raising and educating their children. This could also be used to influence creators of materials for deaf children if it is shown that story-based materials are more effective than didactic, entirely learning-based materials in giving deaf children narrative experience. Moreover, if ebooks that are more story-based than strictly educational are shown to be more effective, it is possible that more funding will be directed to content creators such as VL2 and individuals with access to the means of storybook creation to encourage the publication of stories that are not strictly didactic.

To that end, this study should have a follow-up with the participants. Ideally, the researchers would be in touch with the consultants on a yearly basis, receiving updates on the child's reading comprehension, English, and ASL proficiency. This should last until the child's high school graduation, at which point the study can conclude and the new data can be considered in light of the parent-child dyad's performance during the original study. This would also add a new, more modern statistic regarding the deaf child of hearing parent's academic standing in comparison to their hearing peers, which could be used as a baseline for future research.

Most of all, this experiment will be used to increase reading activities among deaf children and their hearing parents. There is nothing in the literature to suggest that bimodal bilingual shared reading activities with deaf children will hurt their development, and so many materials that suggest that it could help immensely in not only language development but also in the building of positive self-conceptions and self-esteem. If the only thing this study accomplishes is to create a reason for a parent to have successful shared reading experiences

with their child, that would be enough of an incentive to conduct it—but it has the potential to accomplish much more. Ideally, this research will foster an interest in English learning and ASL learning in deaf children. Right now academics as a whole push forward the idea of the potential for language to enable personal advancement in a world of obstacles for deaf children; but language is more than that. It has the potential to create art, and while it is necessary for deaf children to be given the tools for advancing through a hearing world, they deserve the right to the tools for creation in the Deaf-World.

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