Is there any linguistic value in letting Norwegian toddlers watch TV series in English?

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1. Introduction

Children are generally more flexible to foreign language acquisition than adults. This can informally be confirmed by looking at how adult language learners often struggle with getting rid of their "foreign accents". It can also be scientifically argued, by looking at observations of the plasticity of the brain, which show that the developing neurological networks of young children make it easier to learn a second language than the less pliable networks in older brains (Kuhl, 2005). As the English language becomes more integrated into the Norwegian society, the benefits of achieving fluency at an early age becomes socially visible as well as biologically. An improved understanding of the English language at a young age would give Norwegian children many advantages later in life, such as getting wider access to educational programs and job markets.

During the last years, we have seen that the English language is making its way into Norwegian households like never before (through Netflix series, YouTube videos, video games, podcasts, international news outlets etc.) and at a first glace it might seem like a Norwegian home is an ideal environment for a child to learn English. However, what these above-mentioned outlets have in common is that they do not demand social interaction from the one who is watching or listening. There is an ongoing debate over whether social interaction merely functions as a trigger for grammatical understanding or whether grammatical understanding is fundamentally based upon it, but the role of social interaction as an essential factor in the acquisition of a first language is unquestionable (Vulchanova, 2017). And in most Norwegian households, Norwegian is still the language used for social interaction, especially in child-adult conversations.

So, does this create a paradox, where Norwegian children are constantly exposed to English language, but completely unable to access it? Or will the children be able to learn from English speaking non-social content, as long as it is age appropriated? These are the questions that form the basis of this thesis. Based on experimental and theoretical research, I will investigate whether there is any linguistic value in letting Norwegian toddlers watch English TV series. The test-subject in experiment is my son (who at the beginning of this research turned 17 months), and the content he will be watching is the British animated series *Peppa Pig*. As we still know very little about the side effects of spending too much time in front of screen media, I have concluded that 20 minutes a day seems sufficient.

Unfortunately, I had only three months available to do the study, which made it difficult to get any clear results, but still, based on the theoretical research I have made and a

couple of interesting experimental observations, I believe that this research has shown that there is educational value in letting a toddler watch English TV series, as long as certain criteria are fulfilled.

2. Theory

2.1. How do we acquire language?

Seeing that the test subject seems to fall in between the brackets of simultaneous bilingualism (where the child grows up in a bilingual environment from birth) and sequential bilingualism (where a person learns a second language after already having developed a first language), it is necessary to consider both theories on how we acquire a first language and how we acquire a second language.

We know that "Language acquisition begins in perception long before the production of the first word" (Werker & Heinlein, 2008), but how exactly do we go from being babbling babies to articulate children? There are many suggestions to how this is done and I will not go into which one sounds more plausible. I will only provide a simple outline of the most common suggestions. To begin with the most basic, the current understanding of how language acquisition works are mainly based in two differentiating camps. One side is based on the belief that grammatical understanding of a language is something that is innate in all human beings. The basis for this idea was proposed by Noam Chomsky and is often referred to as Universal Grammar (Karmiloff, K., & Karmiloff-Smith, 2002). This nativist idea suggests that exposure to linguistic output function merely as a trigger for language learning (Vulchanova, 2017). On the other side, we have those who argue that social interaction alone forms the basis of language acquisition, that all aspects of language must be taught and learned – mainly through child-adult conversations (Vulchanova, 2017). The people representing this group are often referred to as socio-pragmatics or construction based theorists, and suggest that children learn to speak by experiencing and remembering speech patterns, which they use as templates for their own language production without any subconscious understanding of the different words categories (Karmiloff, K., & Karmiloff-Smith, 2002).

From these two starting points follows a number of hypotheses on how children begin to express their needs and emotions by using words instead of screams. Several of these hypotheses are referred to as bootstrapping methods, which means that the child uses one aspect of the linguistic system (e.i. syntax, semantics or phonology) to understand how the

other works, which consequently becomes the foundation for the child's long career as a language producer (Karmiloff, K., & Karmiloff-Smith, 2002). In 1982, Steven Pinker proposed the semantic bootstrapping hypothesis, that suggests that children begin language learning by gradually generating knowledge about what the different word categories resembles in the real world (Karmiloff, K., & Karmiloff-Smith, 2002). He says that the child's first steps on the way to understanding the syntax of a language are based on an understanding of nouns. This understanding is achieved by rexperiencing that real-world objects are semantically represented in the same way as other real-world objects (Pinker, 1995). When a child has understood that all objects are structured in certain ways (as nouns) in sentences, he[1] will then be able to understand that actions are syntactically expressed differently than objects, which must mean that they belong to a different word category. When the child has gathered enough information about how actions are expressed (as verbs), he can then go on to the next word category (e.g. adjectives). This will go on until the sentences he must relate to becomes more advanced than simple declarative sentences. Simply put, Pinker suggests that children use their semantic understanding to comprehend the syntax.

Some nativist critics of Pinker's hypothesis have suggested that it is the other way around, that the child first understands the syntax, and then use this understanding to achieve a semantic understanding (Karmiloff, K., & Karmiloff-Smith, 2002). The child will compare the sentences he is exposed to, and based on what these sounds like, he is able to understand what function each word has. He will understand that objects are always expressed in certain ways, and if he hears a word that he does not know the real world meaning of, he will nevertheless be able to understand that the word must represent for example an object, based on its syntactical representation (Karmiloff, K., & Karmiloff-Smith, 2002).

The previous two hypotheses are based on the idea of an innate grammatical understanding in children. Of the suggested bootstrapping methods that are not based on Universal Grammar, phonological bootstrapping is the most prominent one (Karmiloff, K., & Karmiloff-Smith, 2002). In this hypothesis, it is proposed that children use the sound patterns of sentences to understand what each word represent in the real world. They argue that children understand that different stress patterns express the different word categories (Karmiloff, K., & Karmiloff-Smith, 2002). By observing how sentences with different

[1] I will be using the pronoun *he* when referring to the language learner. This choice came natural since the test subject in this experiment (my son) is a boy.

meanings also sound differently, the child is eventually able to gather enough information to create a bank of different sentence templates which will be used for further understanding and expression. Phonological bootstrapping differs from syntactic bootstrapping in that the child in this case is not aware of the different word categories. When the child is going to express something, he remembers how something similar has been expressed to him earlier, and edits that information to make I fit what he wants to say (Karmiloff, K., & Karmiloff-Smith, 2002).

It is important to underline that these hypotheses are primarily concerned with the acquisition of a first language. But, since the test subject has not yet fully formed a first language, they might also apply to his acquisition of a second language.

2.2. Can we acquire a second language by watching TV?

To consider the role TV might have in the acquisition of a second language we must first take into account general aspects of second language acquisition. Research shows that children are capable of acquiring more than one language at a time, and they do so by separating the languages from each other from the very beginning (Werker & Heinlein, 2008). This also implicates that when we are learning two different languages, there are two different processes going on at the same time (Werker & Heinlein, 2008). Interestingly, mixing two languages will not have any negative impact on a child's language acquisition, and there is no need for differentiating the languages by for example having one parent speak one language and the other speak another (Werker & Heinlein, 2008). In addition, Steven Pinker says that "children do not … need to hear a fullfledged language to end up with one (Pinker, 1995, p. 18)**.** He points out that as long as the child is in an environment where the second language is being used, preferably with other children, the child will adjust to what is spoken around him (Pinker, 1995).

As we can see, we are perfectly equipped for learning a second language, but as anyone who has tried to acquire a foreign language can confirm, the learning process demands a lot of effort. All languages follow certain patterns based on syntactic, semantic and phonological features. In the process of trying to communicate with the surroundings, the child expands these language patterns by organising the linguistic features into new configurations (Yusa et al., 2017). For a child to make sense of a foreign language that he is being exposed to, he must reconfigure the linguistic framework that he has been building around his first language (Yusa et al., 2017). Patricia K. Kuhl (2004) suggests, in her theory on neural commitment, that we are not only creating and understanding linguistic patterns

when learning a language, but we are also physically creating neurological patterns in our brains. When a person is exposed to an unknown language, and the linguistic signals do not conform to the existing neurological patterns, the signals become indecipherable. For a person to gain access to the syntactical information of an unknown language, he must physically reconfigure the existing neurological patterns in his brain (Kuhl, 2004). This means that as the child becomes more proficient at his first language, the patterns grow, and more reconfiguring is needed to adapt to new languages, which therefore makes it proportionally more difficult to acquire a second language (Kuhl, 2004).

An important observation that supports Kuhl's (2004) theory is that before children turn 6 months, they can discriminate between all phonetic units used in every language, but by the time they reach 1 year, they have most likely lost the ability to discriminate between the phonetic units they have not been exposed to (Yusa et al., 2017). In the period between 6 and 12 months, the child goes from being a "universal listener" to a "native listener" (Yusa et al., 2017). For parents who are eager to teach their child more than one language as soon as possible, this does not mean that all hope of making their child a native listener is out if they have missed the 6 months mark. In fact, a study showed that exposing 9-10 months old infants to a foreign language over a period of 4-6 weeks, made them as efficient in discriminating between phonetic units as native listeners (Kuhl, 2007). Another interesting aspect of this study is that it emphasizes the importance of the way that the content is presented. In the study, one group was exposed to the foreign language through interaction with physically present adults, while another group were exposed to the same content, but through a TV screen. Interestingly, only the group who was taught by a physically present person, was able to discriminate between phonetic units in the same way as a native listeners. This means that parents who think that they can place their kid in front of a TV screen and expect him to become fluent will be very disappointed. The observations from the study also strengthens the argument that children can only acquire language through social situations (Kuhl, 2007).

Although the necessity of social interaction seems to be unquestionable (at least until artificial intelligence becomes more sophisticated), and that TV certainly is an inferior language tutor than adults, is there still a place for screen media in second language acquisition for children? Research has shown that infants interpret much of what is said to them based on visual cues from talking faces (Werker & Heinlein, 2008). In this regard, TV can be seen as a poor educator of language since it is extremely difficult for a child to connect words and meaning without these visual cues (Pinker 1995). But in spite of these facts, more recent studies have pointed out that screen media actually can be of linguistic value to infants

and toddlers, disregarding its inferiority to social interaction (Linebargar & Vaala, 2010). With that being said, its value is highly dependent on the child who is watching, the content he is watching, and the environment surrounding the experience (Linebargar & Vaala, 2010). The content of the TV program should be based on situations that is familiar to the life that the child lives, so that he can understand more easily what is going on. The content should alos be repetitive and predictable, without too many new visual impressions, so that the child can more easily guess what is being said. In addition, to get the most out of the viewing, the child should have an adult beside him who can explain what is going on and ask questions so that the child must engage more actively with the content (Linebargar & Vaala, 2010). This will create a form of social situation, which we know the importance of.

Although there is no available research on the effect of having toddlers watch TV series in a foreign language, there have recently been done some research on incidental vocabulary learning in older children and adults by watching TV programs. A Greek study demonstrated how *Peppa Pig,* the TV program that I also use in my experiment, was successfully used to increase English vocabulary in Greek schoolchildren (Alexiou, 2015). Other studies have shown that children who watch English TV programs on a regular basis develop a larger English vocabulary than those who do not (Peters & Webb, 2018). The importance of being exposed to authentic material when learning a second language is often emphasized by language didactics. It is difficult to say from what age this authentic material becomes useful, but as young children are watching more and more TV, this can be a good source for authentic material in the foreign language (Peters & Webb, 2018).

3. Method and Results:

3.1. Method

The test subject was exposed to the animated TV show *Peppa Pig* for 20 minutes each day over a period of 3 months. To record what linguistic value he gained from watching the show, I kept a diary consisting of English and Norwegian words that he acquired during the period. The purpose of this experiment was that by comparing it with my theoretical research, I would be able to say something about the effect that watching TV series has on toddlers.

3.2. Results

During the research period, the test subject did not expressed any new English words away from the TV. But, he repeated two English words after they had been expressed in the show. The first word he said was (a version of) "helicopter", which he said either as a response to having seen a helicopter on the screen, or by listening to the narrator say the word. In this incident, he had already pronounced the word in Norwegian after having seen a real helicopter. The second word he repeated was *knee*. This happened right after a scene where the word knee was repeated three times (which I will describe in the discussion part), and in this case, he had never said the word before. However, he had heard it being used as the Norwegian word for number nine, "ni". Neither of the words were repeated as a response to something I had said, but both were expressed when I sat next to him.

The most interesting observation came two months into the experiment, when the test subject pointed at *Daddy Pig* (Peppa Pig's father) and said "pappa", and at *Mummy Pig* (Peppa Pig's mother) and said "mamma". No one had told him that they were Peppa's parents, which must mean that he either had understood that daddy means "pappa" and "mummy" means "mamma", or that he had understood enough of the plot in the series to be able to compare it with the real world and realise that these two cartoon pigs resembled real world parents.

Norwegian vocabulary development: During the research period, the test subject went from being able to produce around 20 words to being able to produce around 60. The most noticeable difference came in his receptive vocabulary (although to give a number of words he acquired would be based too much upon guesswork), where he went from occasionally being able to give feedback when presented with questions or orders, to responding to questions and orders with either clear yes and no answers or by following orders (such as throwing things in the garbage) or not following orders (e.g. by protesting loudly when being ordered to go to bed).

4. Discussion

4.1. About the method

The problem with using children as test persons is, as Steven Pinker (1995) puts it, that they are not designed for the benefit of researchers: "Their cognitive, social, perceptual, and motor

skills are all developing at the same time that their linguistic systems are maturing and their knowledge of a particular language is increasing; none of their behavior reflects one of these components acting in isolation" (p. 42). These factors become especially apparent when studies, like this, lack sophisticated measuring tools. Kuhl (2004) says that by 18 months of age, the average child can produce 50 words and understand 150. I knew I would struggle with trying to measure the test subject's perceptive vocabulary accurately, and although I tried to ask him questions where I included English words and phrases, I did not get any valuable response. As I had predicted, I had to base my experiment on his receptive vocabulary which, unfortunately, would not give the answers that I were most curious about: what he would be able to understand from English-speaking screen media.

During the first week, the test subject was only able to sit still for a couple of minutes at a time, but after 2-3 weeks, he started to become comfortable with watching the show for about 20 minutes a day. There were days where he did not watch TV at all, and days where he watched for longer than 20 minutes. But it is fair to say that I was able to go through with the experiment as planned.

4.2. About the content

I selected the British animated series *Peppa Pig* due to its availability on Netflix and its positive reviews. The show is centred around a family of four pigs (Daddy Pig, Mummy Pig, Peppa, and her little brother George), and we follow Peppa as she spends time with her extended family and friends. Each episode is 5 minutes long. The show's characters use a slow, articulate, and repetitive style of speech which makes it suitable for language acquisition (Milton, 2009). The dialogue between the characters are also accompanied by a narrative voice who is informing the viewer of what is going on by using simple declarative sentences. The Greek study mentioned earlier showed that in the four episodes they had selected for their study, 86% of the words came from the 1,000 most frequent words in the English language (Alexiou, 2015). In addition, in each episode individual words are repeated with high frequeny. In the case where the test subject repeated the word *knee*, Peppa falls over and hurts her knee, and when she is asked if she is alright she answers, "I've hurt my knee". Peppa's teacher, Madame Gazelle, is then called upon and says, "You've just grazed your knee, Peppa", and then the narrator says "First, Madame Gazelle cleans Peppa's knee" (Astley & Baker, 2015). This type of dialogue was clearly very effective.

4.3. About the results

I included a short summary of the test subject's Norwegian development in the results, hoping that I could compare them with the acquired English vocabulary. When I now have gone through the theories of language acquisition, especially those concerned with the importance of social interaction, it does not come as a surprise that the test subject did not acquire more English words. In normal circumstances children learn about 3 words each week (Karmiloff & Karmiloff-Smith, 2002), which is an approximation that fits well with my own results. When a child becomes capable of producing around 150 words, he will experience a giant leap in word production, and the vocabulary acquisition will go from 3 words per week to 8-10 words each day (Karmiloff & Karmiloff-Smith, 2002). Since Norwegian is the test subject's dominant language, it is only natural that the three new words produced each week were Norwegian. Indeed, this makes it very exciting to see if any of the words he produces when the vocabulary sprint sets in (and he does not have to be as selective about which words he learns) are in English. Hence, I would predict that the most interesting results will come at the age of 2-3, when his productive lexicon starts to match his receptive one and when he has been exposed to English speaking content over a longer period of time.

4.4. Theoretical basis for the results

Although the results were not as illuminating as I had hoped for, the test subject did actually produce English words and he understood some of the content, which means that he did get linguistic value from watching *Peppa Pig.* Trying to get a linguistic explanation of the results, it is possible that due to the motherese-like speech style of the program, he might have recognised stress patterns in the language, and understood the family situation based on aspects of phonological bootstrapping. (Since both English and Norwegian are SVO-lanugages, he might also have used Norwegian templates to extract meaning out of the English content.) The fact that he pointed to the parents and said the Norwegian words for mummy and daddy, confirms that he is able to pick up at least some visual cues from the screen. Over time, when his understanding of his surroundings evolves, this might lead to him being able to link words with the content that he is watching and from there make use of semantic bootstrapping.

What might be interesting to note is now that he is able to pick out sounds from the TV, like knee/ni and helicopter/helikopter, and his native language is evolving, he might start thinking more about the features of the words he recognizes. With cognates like "helicopter",

he will see that the word represents the same as in Norwegian as in English, which will increase his English vocabulary. And for false friends like knee/ni, he will eventually realise that this word is semantically and syntactically represented differently from Norwegian. This latter realisation might eventually improve his syntactical comprehension of the English language.

Based on the fact that both words he produced are also used in Norwegian, it seems likely that he recognised the sounds as something that he had heard before, and then he uttered them for that reason. This point us towards that even though a child has not yet a fully formed native language, the native language is still of importance when acquiring a second language – especially through non-social exposure.

5. Conclusion

Based on Kuhl's (2004) neural commitment theory, acquiring two different languages might to some degree resemble how one would build an amphibious vehicle. If the vehicle is designed only to function on water, it will demand a lot of reconfiguration to get it to function on land as well. However, if the vehicle is designed, from the very beginning, to function both on land and on water, then the driver would avoid a lot of hard work when he later might have to adapt to both elements. From this point of view, it seems like teaching English to a child as early as possible would be very beneficial. However, the learning should of course not be forced, and English should be integrated naturally into the child's daily life. Watching English TV instead of Norwegian TV might be one of the measures that a caretaker can take in order to accomplish this.

My experiment showed that TV is not some kind of magic transporter of language that makes children acquire language effortlessly at the same time as keeping them quiet. But what it also showed is that toddlers can have some direct linguistic benefits from watching TV in a foreign language, even though they have no prior knowledge of the foreign language or a fully developed first language.

With this in mind, English TV should be regarded as beneficial for educational purposes – if the content and setting is appropriate. Based on my results, I would argue that letting a toddler watch *Peppa Pig* 20-30 minutes a day, together with a grown-up, could be justified as a starting point in the acquisition of English as a second language. But it is important to emphasize that watching TV is severely inferior to social interaction when it comes to language acquisition in young children. The real value of letting toddlers watch TV

does not lie in the TV experience itself, but in the English child-adult interaction that it might encourage.

References

Alexiou, T. (2015). Comic series and 'Peppa Pig': A hidden treasure in language learning. *Language learning and teaching in multi-cultural environments*, 187-206

Astley, N. & Baker, M, (2015). "hospital." Peppa Pig, season 4, episode 2. Netflix. https://www.netflix.com/Kids/character/983450

Karmiloff, K., & Karmiloff-Smith, A. (2002). Pathways to Language (Vol. 1st Harvard University Press pbk. ed). Cambridge, Mass: Harvard University Press. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=281967&site=ehost-live

Kuhl, P. K. (2004). Early language acquisition: cracking the speech code. Nature reviews neuroscience, 5(11), 831

Kuhl, P. K. (2007). Is speech learning 'gated' by the social brain?. *Developmental science*, 10(1), 110-120.

Linebarger, D. L., & Vaala, S. E. (2010). Screen media and language development in infants and toddlers: An ecological perspective. *Developmental Review*, *30*(2), 176-202.

Milton, J. (2009). *Measuring second language vocabulary acquisition* (Vol. 45). Multilingual Matters

Peters, E., & Webb, S. (2018). Incidental vocabulary acquisition through viewing L2 television and factors that affect learning. *Studies in Second Language Acquisition*, 1-27.

Pinker, S. (1995). Language acquisition. Language: An invitation to cognitive science, 1, 135-82.

Vulchanova, M., Baggio, G., Cangelosi, A., & Smith, L. (2017). Language Development in the Digital Age. *Frontiers in human neuroscience*, 11, 447.

Werker, J. F., & Byers-Heinlein, K. (2008). Bilingualism in infancy: First steps in perception and comprehension. Trends in cognitive sciences, 12(4), 144-151.

Yusa, N., Kim, J., Koizumi, M., Sugiura, M., & Kawashima, R. (2017). Social Interaction Affects Neural Outcomes of Sign Language Learning As a Foreign Language in Adults. In: *Frontiers in human neuroscience*, 11, 115.