Using Television to Boost Native-Speaker Input for L2-Learning Children: A Cautionary Tale

Tamara Sorenson Duncan and Johanne Paradis

1. Introduction

Television is frequently suggested to be a valuable language “teacher” for children who are learning a second language (L2), especially when parents have limited L2 fluency. In this context, parents may not be providing their children with sufficiently rich input to support L2 development. In fact, a growing body of evidence suggests that increased L2 input at home has negligible influence on the emerging L2 abilities of children from immigrant and refugee backgrounds (e.g., Chondrogianni & Marinis, 2011; Golberg, Paradis, & Crago, 2008; Paradis, 2011). Accordingly, television may provide an opportunity to increase the amount of native-speaker input children receive (e.g., Lindgren & Muñoz, 2013; Paradis & R. Jia, 2017). Advice to consider television as a valuable source of language input, however, may seem surprising given that high quantities of television viewing have been associated with depressed expressive language scores and even language delays in monolingual children (e.g., Chonchaiya & Pruksananonda, 2008; Close, 2004). Accordingly, this study considers whether increased television viewing is associated with increased L2 abilities in young children from immigrant and refugee backgrounds.

To gain a comprehensive understanding of the influence of L2 learning, it is important to contextualize the input from television in relation to other sources of L2 input. Previous research has demonstrated that children from immigrant and refugee backgrounds learn the L2 from a variety of sources of L2 input, including school, parents and siblings. Accordingly, we first briefly review literature about the influence of these other sources of L2 input, before returning to the influence of television-viewing.
1.1. Sources of L2 input: School

Previous research has shown that the amount of L2 input children have received at school is highly related to their emerging language abilities (e.g., Armon-Lotem, Walters, & Gagarina, 2011; G. Jia & Aaronson, 2003; G. Jia & Fuse, 2007; Paradis, 2011; Sorenson Duncan & Paradis, 2018; Unsworth, 2013). In fact, even small amounts of cumulative exposure through school have been suggested to have profound effects on children’s emerging language abilities (Hoff, Rumiche, Burridge, Ribot & Welsh, 2014). As such, in seeking to understand the influence of L2 television viewing on children’s emerging L2 abilities, this study first accounts for the amount of exposure children have had to the L2 through school.

1.2. Sources of L2 input: Family members

Another key source of L2 input that needs to be considered is the L2 input that children receive from family members. In this study, we consider the relative quantity of L2 input that children receive from their mothers and their siblings. Relative quantity of input refers to the proportion that each language is used. For example, some children will hear more English than their L1, while others will hear more of their L1 than the L2. Several studies have suggested that increased relative L2 input from mothers has a negligible, if any, effect on school-aged children’s emerging L2 skills (e.g. Chondrogianni & Marinis, 2011; Golberg, Paradis, & Crago, 2008; Páez, Tabors & Lopez, 2007; Paradis, 2011; Rojas, Iglesias, Bunta, Goldstein, Goldenberg, & Reese, 2016). Notably, the negligible effect of maternal L2 input on children’s emerging L2 abilities is one reason that television viewing is recommended to boost the native input children receive.

Siblings, in contrast, could be a particularly important source of L2 input at home (e.g., Bridges & Hoff, 2014; Hoff-Ginsberg, 1998; Hoff-Ginsberg & Krueger, 1991; Hoff, Welsh, Place & Ribot, 2014; Rojas et al., 2016; Sorenson Duncan & Paradis, 2017; under review; Wong-Fillmore, 1991). In fact, for Spanish-English bilingual children in kindergarten, Rojas et al. (2016) reported that input from older siblings and peers, but not parents, was significantly related to mean length of utterance and lexical scores on an English narrative task. Therefore, as with L2 exposure at school, we account for the relative quantity of L2 input children hear from their siblings before evaluating the influence of L2 television viewing on their emerging L2 abilities.

1.2.1. Quality of L2 input at home

Researchers posit that the negligible influence of maternal relative quantity of L2 input on children’s emerging L2 abilities may arise from qualitative properties of this input. In many of these families, the parents have limited L2 fluency and consequently parental input may not include sufficient exemplars to support language development. (Chondrogianni & Marinis, 2011; Hammer, Komaroff, Rodriguez, Lopez, Scarpino & Goldstein, 2012; Paradis, 2011;
Sorenson Duncan & Paradis, 2018). As such, it is relevant to consider what alternative sources of L2 input outside school may support L2 acquisition for these children. To this aim, researchers have sought to identify additional sources of L2 input, for example by estimating the amount of time children spend engaged in activities associated with high quality input (e.g., G. Jia & Fuse, 2007; Karlsen, Geva & Lyster, 2016; Paradis, 2011). These estimates are frequently aggregated into measures of input quality (often called language richness). Such aggregated measures cover a wide range of experiences, including reading, television viewing and extracurricular activities. Positive and significant associations have been found between the home language richness scores and children’s emerging L2 lexical and morphosyntactic abilities (e.g., Jia & Fuse, 2007; Karlsen, et al., 2016; Paradis, 2011; Paradís, Rusk, Sorenson Duncan & Govindarajan, 2017).

As a component of these aggregate richness scores, television viewing is assumed to contribute positively to children’s emerging L2 abilities (G.Jia & Aaronson, 2003; Paradis, 2011). However, little research explicitly tests if young children can capitalize on the L2-input provided through television to the same extent that they benefit from high quality L2 input from other sources, like that received from siblings and at school. In contrast, this study specifically considers the relation between television viewing and a variety of L2 abilities in children from immigrant and refugee backgrounds.

1.3. Learning language from television

In support of the hypothesis that television viewing can support L2 acquisition for young children, previous studies with monolingual children have shown that increased viewing of educational television programming is associated with increases in language development (e.g., Close, 2004; Linesbarger & Walker, 2005; Mares & Pan, 2013; Uchikoshi, 2006). However, these findings appear to be restricted to very specific television programs and do not appear to transfer to indiscriminate increases in television viewing. In fact, high quantities of television watching have been associated with depressed expressive language scores and even language delays in monolingual children (e.g., Chonchaiya & Pruksananonda, 2008; Close, 2004). For bilingual toddlers, researchers have found no relation between television viewing and vocabulary size (Hudon, Fennell & Hoftyzer, 2013; Patterson, 2002). In terms of L2 development specifically, Scheele, Leseman and Mayo (2010) did not find a relation between school-aged children’s L1 (Turkish/Moroccan) or L2 (Dutch) development and time spent watching television. These latter findings suggest that for bilingual and L2-learning children increased television viewing may not harm language development. However, null results do raise concerns about the effectiveness of television viewing as a language “teacher” for young children, moreover, null findings are difficult to interpret because they could arise from methodological or statistical power reasons. It is, thus, important to continue to investigate the extent to which television viewing supports or hinders L2 learning, especially beyond vocabulary acquisition.
1.4. The current study

This study asked the following question: is increased television viewing associated with increased L2 abilities in young children from immigrant and refugee backgrounds? In addressing this question, we considered the influence of television viewing on L2 abilities in relation to other sources of L2 input such as, cumulative L2 exposure through schooling and relative L2 quantity of input from mothers and siblings.

As a follow up question, this study also asked: does television viewing differentially impact linguistic subdomains? This study employed a story-generation task to assess children’s L2 abilities. First, we measured narrative macrostructure, which refers to children’s skill at constructing a coherent and cohesive story, e.g., story grammar and first mentions (character introductions). Second, we measured narrative microstructure components in children’s stories such as, use of complex syntax and lexical diversity.

2. Methods

2.1. Participants

Eighty-nine 5-year-old children who were learning English as a L2 participated in this study. Of these children, 36% (32/89) were foreign-born. All children had foreign-born parents and all children spoke their L1 at home. These children had diverse L1 backgrounds: Arabic, Cantonese, Farsi, Gujarati, Hindi, Mandarin, Punjabi, Somali, Spanish and Urdu. English exposure primarily occurred through English-medium school. All children attended half-day school programs (2.5-3 hours/day) that were conducted in English and were either four or five days a week. Further demographic information is provided in Table 1.

2.2. Procedures

2.2.1. Alberta Language and Environment Questionnaire

This parent questionnaire, administered as an interview, was used to gather detailed demographic and language environment information (ALEQ: Paradis, 2011; Paradis, n.d.). For the present study, the following information was included: cumulative exposure to the L2 in school, the relative quantity of the L2 spoken to the child by the mother and by the siblings and the amount of L2-medium television watched each week. The relative quantity of English (L2) spoken by family members was scored on a five-point scale (0-1), ranging from no-English/all-L1 to all-English/no-L1. Television viewing was measured using two scales: (a) the amount of time spent watching English-medium television and (b) the amount of time spent watching English-programming on a computer. Each scale ranged from 2 (everyday) to 0 (almost never). The two scales were then summed to yield a score for each child (maximum of 4). In Table 1, we also included mother’s self-rated fluency in English, on a 0-4 scale, ranging from not
fluent in English to very fluent, and maternal education in years. The latter two variables were included to further characterize the sample.

2.2.2. Edmonton Narrative Norms Instrument

A story generation activity was used to sample children’s expressive L2 abilities (ENNI: Schneider, Dubé, & Hayward, 2005). Children were first shown a word-less picture book with 6 short stories. While viewing the books a second time, children told the research assistant their stories. Throughout, the picture book was held away from the assistant’s view so that the child could not assume shared visual information. Stories were video-recorded and later transcribed and analyzed by a native-speaker of English. Transcription reliability was 91% (word-by-word). Transcripts were then analyzed for story grammar, first mentions, syntactic complexity and lexical diversity. In order to generate standard scores, raw scores were calculated according to the guidelines in the manual (Schneider et al., 2005). Standard scores are based on monolingual norms and consequently they are not indicative of developmental language disorder but rather the extent to which these typically developing L2-learning children are approaching the language abilities exemplified by their same-aged monolingual peers (cf. Paradis, Schneider, & Sorenson Duncan, 2013).

For the purposes of logistic regression modelling, scores were converted to a log odds ratio. For story grammar and first mentions, this was the number of included elements compared to the number of excluded elements (based on the coding manual for this test). Unlike for the raw score, each included element was given equal weight, regardless of whether it was a primary or secondary element (story grammar) or the type of referring expression used to introduce characters (first mentions). Syntactic development was estimated by comparing the number of simple and complex sentences (e.g., Paradis et al., 2017). To model lexical development, the ratio of types to tokens was tabulated (e.g., Roy, Frank, & Roy, 2009).

3. Results
3.1. Children’s L2 abilities across linguistic subdomains: Descriptive statistics

Table 2 provides a summary of children’s performance across linguistic subdomains. This summary table includes raw scores, standard scores and the values used to calculate the log odds ratios, which were used in the logistic regression models. To interpret the standard scores, it is important to note that the monolingual mean is 10 and the one standard deviation range is 7-13. Examining the standard scores in Table 2, reveals substantial variability across children, with some children obtaining scores well above the expected mean for monolingual children and other children scoring more than 1SD above the monolingual mean. On average, the standard scores for these L2-learning children fall within 1SD of the monolingual mean on all measures, except First Mentions.
Table 1. Summary of demographic information of participants

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
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<tbody>
<tr>
<td>Age</td>
<td>60.43 months (5;0)</td>
<td>4.17 months (0;4)</td>
<td>50 – 66 months (4;2 - 5;6)</td>
</tr>
<tr>
<td>Cumulative L2 exposure at school (in months)</td>
<td>12.72 months</td>
<td>8.44 months</td>
<td>2 – 36 months 0 – 20 years</td>
</tr>
<tr>
<td>Mother’s level of education</td>
<td>11.95 years</td>
<td>5.00 years</td>
<td>0 – 20 years</td>
</tr>
<tr>
<td>Mothers’ relative L2 input to the child</td>
<td>0.20</td>
<td>0.21</td>
<td>0 – 0.75</td>
</tr>
<tr>
<td>Mother’s (self-reported) L2 fluency</td>
<td>2.43 out of 4</td>
<td>1.13</td>
<td>0 – 4</td>
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<tr>
<td>Sibling’s relative L2 input to the child</td>
<td>0.69</td>
<td>1.32</td>
<td>0 – 1</td>
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<tr>
<td>Amount of television viewing</td>
<td>2.71 out of 4</td>
<td>1.11</td>
<td>0 – 4</td>
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</table>

Table 2. Summary of children’s L2 abilities across linguistic subdomains

<table>
<thead>
<tr>
<th>L2 Ability</th>
<th>Raw Score Mean (SD, range)</th>
<th>Standard Score Mean (SD, range)</th>
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<tr>
<td>Story Grammar</td>
<td>14.83 (7.26, 1-26)</td>
<td>7.05 (3.99, 0-13)</td>
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<td>10.09 (4.84, 1-18)</td>
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<tr>
<td>First Mentions</td>
<td>25.18 (7.47, 10-40)</td>
<td>6.11 (3.63, 0-14)</td>
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<td></td>
<td>11.17 (2.47, 4-14)</td>
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<tr>
<td>Syntactic Complexity</td>
<td>1.19 (0.12, 1-1.47)</td>
<td>7.96 (2.78, 3-14)</td>
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<td></td>
<td>55.33 (21.42, 9-125)</td>
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<td></td>
<td>10.27 (7.62, 0-34)</td>
<td></td>
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<tr>
<td>Number of Different Words</td>
<td>103.57 (29.72, 46-199)</td>
<td>7.28 (2.66, 2-16)</td>
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<tr>
<td>Total Number of Words</td>
<td>395.90 (157.31, 78-935)</td>
<td>8.28 (2.69, 2-17)</td>
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<tr>
<td>Type:Token Ratio</td>
<td>0.27 (0.07, 0.16-0.60)</td>
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3.2. The effect of L2 television viewing on emerging L2 abilities: Logistic regression results

In the first three steps of the stepwise logistic regression models, the other sources of L2 input were added to the model. In step one, children’s L2 exposure at school was added. Next, the relative quantity of L2 input from the mother was added. Relative quantity of L2 input from siblings was added in the third step. Television viewing was added into models in the fourth and final step. This procedure was repeated for each of the four L2 abilities (story grammar, first mentions, complex syntax and lexical diversity). These results are provided in Table 3.

L2 exposure at school and relative quantity of L2 input from siblings were significant and positive predictors of children’s L2 story grammar, L2 first mentions, L2 complex sentence use and L2 lexical acquisition. Although, it is important to note that the significant relation between L2 exposure at school and L2 lexical acquisition was not maintained through the final steps of the regression model. In contrast, relative quantity of L2 input from mothers was not associated with children’s performance on L2 story grammar, L2 first mentions or use of L2 complex sentences. Maternal input was positively associated with L2 lexical acquisition. Increased L2 television viewing had no influence on L2 story grammar and had a negative effect on L2 first mentions, L2 complex syntax use and L2 lexical diversity. The relations between the amount of L2 television viewing and L2 scores are illustrated in Figure 1.

4. Discussion

This study evaluated the extent to which increased television viewing was associated with increased L2 language abilities for children from immigrant and refugee backgrounds. It was hypothesized that increased exposure to native-speaker input through television would serve to enrich the language experiences of these children and thus boost their L2 abilities. However, our results do not support this hypothesis. We found that increased viewing of L2-medium television was associated with decreased performance on a range of expressive L2 measures. That is, children who watched more television included fewer characters in their L2-stories, used less L2 complex syntax and included fewer unique word types. As such, these findings suggest that indiscriminate increases in television viewing have negative consequences across linguistic subdomains.
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<tr>
<td><strong>Story Grammar</strong></td>
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<td>1. L2 Exposure at school</td>
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<td>2. Mother’s relative quantity of L2 input</td>
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<td>3. Older siblings’ relative quantity of L2 input</td>
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<td>4. Television Viewing</td>
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<td>- .17*</td>
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<td><strong>McFadden’s Pseudo R²</strong></td>
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<td>.046</td>
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<td>.151</td>
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<td><strong>First Mentions</strong></td>
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<td>1. L2 Exposure at school</td>
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<td>2. Mother’s relative quantity of L2 input</td>
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<td>3. Older siblings’ relative quantity of L2 input</td>
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<td><strong>Change in Pseudo R²</strong></td>
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**NOTES:** The values presented in the table are unstandardized \( \beta \)-values. Significance is indicated with asterisks: * \( p < 0.05 \); ** \( p < 0.01 \). a Although not significant, it was trending at \( p = 0.07 \).
Figure 1. Idealized effect plots from the final step of the regression models, illustrating the null effect of television viewing on L2 story grammar and the negative relation between television viewing and L2 first mentions, L2 complex syntax use and L2 lexical diversity.

The results of this study may seem surprising when considered in reference to past studies that have included television viewing in aggregate estimates of language richness. In these studies, positive and significant results have been found between the richness of the home language environment and children’s emerging L2 lexical and L2 morphosyntactic abilities (e.g., Jia & Fuse, 2007; Karlsen et al., 2016; Paradis, 2011). Recall, these measures estimate the amount of time children spend engaged in activities associated with high quality input. Television viewing was included as part of language richness aggregate measures, presumably because of the easy access to native-speaker input that it provides. However, the negative association between television viewing and emerging L2
abilities in this study calls into question the appropriateness of including television within such aggregate measures. One potential consequence of including television viewing in these estimates is that the magnitude of the observed effect may be reduced. For instance, Scheele et al. (2010) reported that Turkish-speaking children who more frequently engaged in Dutch (L2) story-telling, but not Dutch television viewing, had higher Dutch (L2) vocabulary scores. In the case of Scheele et al.’s work, had the two scores been aggregated together, the null results for television viewing could have “washed out” the positive association that was found between story-telling and L2 acquisition.

Our results align with what has been shown in monolingual studies, where high quantities of television viewing have been associated with depressed expressive language scores and even language delays (e.g., Chonchaiya & Pruksananonda, 2008; Close, 2004). We found a negative association between L2 television viewing and L2 abilities; that is, those children with increased L2 television viewing had less developed L2 abilities. This finding held even after accounting for the amount of time children had been in school and the amount of English spoken in their homes. Thus, our results suggest caution is warranted in terms of indiscriminate L2 television-viewing.

Our results diverge slightly from past studies that have examined the influence of television viewing on bilingual and L2 acquisition. Like our study, past research suggests that increased television-viewing does not help L2 learning (Hudon et al., 2013; Patterson, 2002; Scheele et al., 2010). The difference is that we found a negative association between L2 television-viewing and L2 acquisition, whereas previous research has reported null results. In seeking to understand these diverging results, we feel that there are important differences between these studies. Most notably, the children in previous studies were younger (ranging in age from 1.5-3 years in past studies, compared to 5 years in this study). Older children are expected to understand and use more complex language than younger children (e.g., Vasilyeva, Waterfall & Huttenlocher, 2008). As the linguistic demands placed on children grow, it is possible that television may not be providing sufficiently rich input to support L2 development. In proposing this age-based explanation for the differences across studies, it is important to note that the exact linguistic input modelled through television programming remains an empirical question for future research, particularly for television programming that targets older children. Further longitudinal studies are also needed to clarify the extent to which and under what circumstances television viewing can negatively impact L2 acquisition.

The negative association between increased television viewing and emerging L2 abilities found in this study contrasts sharply with the positive associations we found between other sources of L2 input and children’s emerging L2 abilities. In this study, children who had been in school longer and heard more English from their siblings included more story elements and characters in their L2 stories. They also used more complex sentences and demonstrated a greater L2 lexical diversity. We feel this contrast between the extent to which television viewing and other sources of L2 input support children’s emerging L2 abilities provides
potential insights into the nature of language learning for young child L2 learners from immigrant and refugee backgrounds. These children appear to benefit greatly from interactive language input. In contrast, at least at this age and this early in their L2 development, they do not seem to be able to capitalize on the passive input that is provided through television.

In interpreting the results of our study, we believe that increased television viewing may have a detrimental impact on children’s emerging L2 abilities because it detracts from time spent engaged in other activities. In other words, if children spend more time watching television, it stands to reason that they have less time available to engage in interactive linguistic experiences, such as play with siblings. As a preliminary investigation, we added interactions between the effect of television viewing and the number of siblings to the final regression models. For all linguistic subdomains, we found a significant interaction between these two variables (for story grammar: $\beta = 0.04, p = 0.05$; for first mentions: $\beta = 0.09, p = 0.01$; for complex syntax: $\beta = 0.04, p = 0.02$; for vocabulary: $\beta = -0.03, p = 1.7e-6$). For vocabulary, the negative interaction suggests that having more siblings exacerbates the detrimental effect of increased television-viewing. However, for story grammar, first mentions and complex syntax the positive interaction indicates that having more siblings decreases the magnitude to which increased television viewing has a detrimental effect on emerging L2 abilities. In essence, this suggests that siblings can act as a buffer against the negative effects of indiscriminate increases in television viewing, at least for some linguistic subdomains. Future research that employs an absolute, instead of relative, measure of input from siblings is necessary to further test this explanation.

Support for our hypothesis regarding interactive language input can be found in studies that have specifically investigated the extent to which television viewing paired with interaction can support language learning. Television programs provide the opportunity to expose children to content that goes beyond their everyday routines and as such they provide an opportunity to introduce new and possibly more elaborate language. When television is paired with interactions, researchers have found that television viewing can improve language abilities. For example, Alroqi, Serratrice & Cameron-Faulkner (in prep.) found that increased verbal interactions while co-viewing media was associated with increased expressive and receptive skills among Arabic-speaking toddlers. Similar benefits of co-viewing and interactive conversations about television programming were also reported in Williams & Thomas’ (2017) study of four- and five- year old Welsh-minority speaking children. In this study, children made greater gains in their Welsh vocabulary after co-viewing a television program with the researcher than did those children in a comparison group who had stories read aloud to them. Although these studies were not specifically about L2 learning, they suggest that television can be a tool to enhance the linguistic richness of interactions. Thus, it is possible that television, and particular television programs, have a place in supporting L2 learning. We do not dispute this conclusion and our results do not speak to these nuanced situations. What our results highlight is that the
indiscriminate use of television as a source of native-speaker input for L2 learning children may not yield the expected results.

Our results suggest that increases in indiscriminate television viewing are associated with lower L2 abilities in children from immigrant and refugee backgrounds at the early stages of L2 acquisition. As such, our findings question the effectiveness of television viewing as a source of L2 input for young child L2 learners. This finding has implications for the way researchers examine the relations between home language input and emerging L2 abilities. Specifically, the results question whether television viewing should be included in estimates of home language richness and more broadly question if aggregation across sources of L2 input is appropriate. A more crucial implication of these findings relates to the advice we give to parents. Our findings clearly illustrate that researchers, educators and clinicians should be cautious in advising parents to use television as a source of L2 input without any interactive support and/or monitoring for quality of programming.

References


