Television Viewing by Young Hispanic Children

Evidence of Heterogeneity

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Objectives: To determine if hours of daily television viewed by varying age groups of young children with Hispanic mothers differs by maternal language preference and to compare these differences with young children with white mothers.


Setting: Nationally representative sample.

Participants: One thousand three hundred forty-seven mothers of children aged 4 to 35 months.

Main Exposure: Subgroups of self-reported maternal race/ethnicity (white or Hispanic) and within Hispanic race/ethnicity, stratification by maternal language preference (English or Spanish).

Outcome Measure: Hours of daily television the child viewed.

Results: Bivariate analyses showed that children of English- vs Spanish-speaking Hispanic mothers watched more television daily (1.88 vs 1.31 hours, \(P = .01\)). Multivariable regression analyses stratified by age revealed differences by age group. Among 4- to 11-month-old infants, those of English- and Spanish-speaking Hispanic mothers watched similar amounts. However, among children aged 12 to 23 and 24 to 35 months, those of English-speaking Hispanic mothers watched more television than children of Spanish-speaking Hispanic mothers (incidence rate ratio [IRR], 1.61; 95% confidence interval [CI], 1.17-2.22; IRR, 1.66; 95% CI, 1.10-2.51, respectively). Compared with children of white mothers, children of both Hispanic subgroups watched similar amounts among the 4- to 11-month-old group. However, among 12- to 23-month-old children, those of English-speaking Hispanic mothers watched more compared with children of white mothers (IRR, 1.57; 95% CI, 1.18-2.11). Among 24- to 35-month-old children, those of English-speaking Hispanic mothers watched similar amounts compared with children of white mothers, but children of Spanish-speaking Hispanic mothers watched less (IRR, 0.69; 95% CI, 0.50-0.95).

Conclusion: Television-viewing amounts among young children with Hispanic mothers vary by child age and maternal language preference, supporting the need to explore sociocultural factors that influence viewing in Hispanic children.

neity within the Hispanic population. Evidence from studies examining other health behaviors in Hispanic populations demonstrates the need to consider the heterogeneity of this population, such as primary language spoken, when evaluating health behaviors in Hispanic individuals.24–26

Understanding whether differences in television viewing exist in Hispanic homes by subgroup differences, such as language use, is important to inform the design of interventions that target this population. Language use in Hispanic individuals, English vs Spanish, is associated with varying sociocultural characteristics and contexts that influence health behaviors and ultimately the impact of interventions.27–32 Based on the results of multiple studies examining other health behaviors, one could hypothesize that there will be differences in child television viewing by maternal language use.24–26 However, because television viewing is a unique health behavior, currently there is insufficient evidence to hypothesize in what way maternal language use in Hispanic individuals will be associated with child television viewing. Nonetheless, if differences by language exist, they may reflect varying parental beliefs about television viewing, different household arrangements, diverse norms of activity, or different access to media.

Any evaluation of television viewing habits in children must consider the influence of child age. Multiple studies have shown increases in viewing over the first 3 years of life, likely related in part to developmental changes during this period.20,22

With data from a large nationally representative sample, our main objective was to determine if hours of daily television viewed by varying age groups of young children with Hispanic mothers differs by maternal language preference (English vs Spanish) and to compare these differences with young children with white mothers.

## DATA SOURCE

We conducted a cross-sectional analysis of data from a cohort study, the National Survey of Early Childhood Health, collected by the National Center for Health Statistics. The methods of the National Survey of Early Childhood Health have been published previously.33,34 Briefly, in 2000 a nationally representative sample of 2068 households with children aged 4 to 35 months was surveyed using a stratified random-digit dialing telephone sampling strategy. Black and/or Hispanic children were oversampled. Data were collected from the parent or guardian who self-identified as most responsible for the health care needs of the child. Eighty-seven percent of respondents were the mother of the child of interest, defined to include biological, step, foster, and adoptive mothers. A computer-assisted telephone interview instrument was used. If more than 1 child in the target age range resided in the household, 1 child was randomly selected to be the target of the interview. Interviews were performed in English or Spanish, based on the respondent’s preference. The interview completion rate was 79.2%. The Council of American Survey Research Organizations survey response rate was 65.6%,35 which accounts for interview completion and households with potentially eligible children who were not reached. Both the Johns Hopkins and the University of Washington–Seattle institutional review boards determined this analysis exempt from review because the database is publicly available.

## METHODS

### DATA SOURCE

The main outcome measure was the number of hours of daily television the child viewed. Mothers were asked: “In a typical day, about how many hours does your child spend watching television or videos?” Responses were captured as integer values, and values above 16 hours a day were considered outliers (n=2) and were dropped from the analyses.

The main independent variable was created based on the maternal report of race/ethnicity and language preference for the interview. Three subgroups were created: white individuals, English-speaking Hispanic individuals, and Spanish-speaking Hispanic individuals. The subgroup of white individuals includes data from mothers who identified as white and answered no to the Hispanic ethnicity question. Individuals in the white subgroup were interviewed in English, except for one. This individual was interviewed in Spanish and was excluded from the analyses owing to the possibility of misclassification. The subgroup of English-speaking Hispanic mothers includes those with maternal Hispanic ethnicity and who were interviewed in English. Spanish-speaking Hispanic mothers are those who declared Hispanic ethnicity and who were interviewed in Spanish. We used the mother’s instead of the child’s race/ethnicity because it is more likely to represent the sociocultural environment of a child younger than 3 years and therefore more likely to be a determinant of the television-viewing habits of these children. Mothers who identified their race as black or other nonwhite races and did not declare Hispanic ethnicity were not evaluated in this study. Data from respondents who did not identify themselves as the mother of the child of interest were also not used.

### COVARIATES

Demographic covariates were selected and included in the final model to control for subgroup compositional differences. The covariates included the child’s age and sex and maternal education level, employment status, age, and marital status. The child’s age in months was included in the final model as a continuous variable and used in stratified analysis coded categorically as 4 to 11, 12 to 23, and 24 to 35 months. Maternal education level was categorized as less than high school, high school, or some college or more. Maternal employment status was categorized as full-time, part-time, or unemployed, and maternal marital status was categorized as married or not married. Maternal age in years was used as a continuous variable.

A screen for mental health was also included in the final model because maternal mental health has been found to be associated with child television viewing.35 Each participant was given a summary score (continuous) based on responses to the 5 screening questions in the Mental Health Inventory–5 screening tool. The Mental Health Inventory–5 has been validated as a measure for depression, anxiety, and affective disorder.36 In diverse samples, Cronbach α ranges between 0.82 and 0.93; the test-retest correlation is 0.50 to 0.60. For all covariates, responses of “don’t know” and refusals were recoded as missing for the analyses.

### STATISTICAL ANALYSIS

Descriptive statistics and comparative analyses were conducted, stratified by maternal subgroups of race/ethnicity (white or Hispanic), and within Hispanic mothers, stratified by language preference (English or Spanish). Demographic characteristics were tested for differences using adjusted Wald and Pearson χ² tests. Number of hours of daily television the child viewed for identified groups was tested for differences using adjusted Wald tests.
### Table 1. Characteristics of 1332 US Children by Maternal Race/Ethnicity and Language Preference

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>White (n=695)</th>
<th>English-Speaking (n=278)</th>
<th>Spanish-Speaking (n=359)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of children, mo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-11</td>
<td>24</td>
<td>30</td>
<td>29</td>
</tr>
<tr>
<td>12-23</td>
<td>38</td>
<td>47</td>
<td>37</td>
</tr>
<tr>
<td>24-35</td>
<td>38</td>
<td>22</td>
<td>34</td>
</tr>
<tr>
<td>Mean maternal age, y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(95% CI)</td>
<td>(30.1, 30.6)</td>
<td>(26.5, 27.6)</td>
<td>(27.3, 28.1)</td>
</tr>
<tr>
<td>Married</td>
<td>80</td>
<td>52</td>
<td>57</td>
</tr>
<tr>
<td>Maternal education, y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High school</td>
<td>9</td>
<td>32</td>
<td>67</td>
</tr>
<tr>
<td>High school</td>
<td>36</td>
<td>37</td>
<td>23</td>
</tr>
<tr>
<td>&lt; Some college</td>
<td>54</td>
<td>31</td>
<td>11</td>
</tr>
<tr>
<td>Maternal employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>31</td>
<td>36</td>
<td>26</td>
</tr>
<tr>
<td>Part-time</td>
<td>23</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>Unemployed</td>
<td>45</td>
<td>49</td>
<td>61</td>
</tr>
</tbody>
</table>

Abbreviation: CI, confidence interval.

*Proportions and means are weighted to be generalizable to the US population of children aged 4 to 35 months.

*Significant differences among all groups, *P* < .05.

Figure. Average hours of daily television viewed by child age and maternal race/ethnicity and Hispanic maternal language preference subgroup.

Exploratory analysis of the main outcome variable—hours of daily television the child viewed—demonstrated a nonnormal and overdispersed distribution that required the use of a negative binomial model.5 This model was used to determine the independent association between subgroups of maternal race/ethnicity and Hispanic maternal language preference and number of hours of television the child viewed daily. Children with white mothers were the reference group.

Among maternal respondents who reported white or Hispanic race/ethnicity (n=1347), 15 (1%) were excluded from this analysis owing to concerns over their recorded data (2 were outliers for the outcome, 1 was a possible misclassification for the main independent variable, and 12 were missing data from 1 of the covariates). The final study population was 1332.

Of respondents, 695 were white (52%), 278 were English-speaking Hispanic mothers (21%), and 359 were Spanish-speaking Hispanic mothers (27%). Characteristics of these subpopulations are presented in Table 1. White mothers were significantly (*P* < .01) older, more often married, and better educated than English- or Spanish-speaking Hispanic mothers. Spanish-speaking Hispanic mothers had the lowest educational levels, with 67% having no high school education.

The initial examination of the mean number of hours of daily television the child viewed demonstrated that children of Hispanic mothers (not stratified by maternal language preference) viewed the same amount of daily television as children of white mothers (1.55 vs 1.55 hours). However, subdividing the sample of children of Hispanic mothers by maternal language preference demonstrated differences in number of hours of children’s daily television viewing between children of English-speaking vs Spanish-speaking Hispanic mothers (1.88 vs 1.31 hours, *P* < .01). Neither of these groups, however, viewed significantly different amounts than children of white mothers (1.55 hours).

The Figure shows the average number of hours of daily television children viewed in the 3 maternal race/ethnicity and Hispanic maternal language preference subgroups stratified by child age. Within each subgroup of children, hours of daily television viewed increases significantly with child age (*P* < .05).

With 3 separate multivariable negative binomial regression models, one for each age group of children (4-11, 12-23, and 24-35 months), analyses showed differences among children with Hispanic mothers when comparing daily television viewing of children of English-speaking Hispanic mothers with children of Spanish-speaking Hispanic mothers. The results in Table 2 show...
that both groups of children watch similar daily amounts of television during their first year of life. However, differences exist in the second and third years of life, with children of English-speaking Hispanic mothers watching significantly more hours of daily television than children of Spanish-speaking Hispanic mothers.

Additional multivariable regression models using data from white and Hispanic mothers showed differences in viewing for children with Hispanic mothers, grouped separately by maternal language preference, compared with children of white mothers. The model for infants aged 4 to 11 months showed no differences in daily viewing amounts in those of English-speaking or Spanish-speaking Hispanic mothers compared with those of white mothers. However, as average viewing amounts rise across older age groups of children (Figure), differences in viewing amounts across the subgroups of children by maternal race/ethnicity and Hispanic maternal language preference appear. In the 12- to 23-month age group, children with English-speaking Hispanic mothers watch more daily television compared with children of white mothers (incidence rate ratio, 1.57; 95% confidence interval, 1.18-2.11). However, in the age group of children aged 24 to 35 months, children with English-speaking Hispanic mothers watch amounts similar to children with white mothers, whereas children with Spanish-speaking Hispanic mothers watch significantly less (incidence rate ratio, 0.69; 95% confidence interval, 0.50-0.95).

These data suggest that the daily television viewing habits of young Hispanic children vary depending on the maternal language preference and age of the child. Although similar television habits exist in children younger than 1 year, by age 3 years children with English-speaking Hispanic mothers watch significantly more hours of television daily compared with children of Spanish-speaking Hispanic mothers, with adjustment for demographic and health factors. Likewise, the children of Hispanic mothers grouped by maternal language preference compared with children of white mothers had similar viewing habits at age 1 year or younger, but by age 3 years, children with Spanish-speaking Hispanic mothers watched significantly fewer hours of television daily. These findings highlight the need to further understand sociocultural factors that influence television viewing habits in young Hispanic children. Interventionists should consider such factors when designing interventions targeting television viewing in young Hispanic children. Additionally, these findings emphasize the need for researchers to appreciate the heterogeneity of the Hispanic population when describing health behaviors and outcomes in this population.

To date, there has been very little research that considers the influence of sociocultural factors on television viewing in Hispanic children. Of the 3 known studies conducted on television viewing in young Hispanic children, results have not shown differences in viewing by maternal nativity, primary language, or acculturation level. However, these studies were limited by their small sample size as well as the homogeneity of their Hispanic sample population. All 3 studies sampled mainly low-income, Spanish-speaking immigrant Hispanic mothers. Strengths of the current study include the large sample size and the sampling of a more heterogeneous Hispanic population.

Reasons for the differing viewing habits found in this study among Hispanic mothers by language preference and child age are potentially numerous, emphasizing the need for further work in this area. One may hypothesize that varying access to either television itself or valued television content may be a reason for the different viewing habits. However, a recent study found that more than 99% of Hispanic families in the United States have at least 1 television in the home, such that basic access should not be a reason for the differences we found. Increased viewing in English-speaking Hispanic homes may be due to increased numbers of television sets, hence lending itself to more opportunity for children to watch television. Yet, Borzekowski and Poussaint found no difference in the number of televisions in the home by language in their small sample of mainly immigrant Hispanic mothers. Thus, access to television probably does not explain the differences we found.

Varying access to valued content, however, may be a possible reason for the differences in viewing habits by maternal language preference and age of the child. Access to cable educational television programming or DVD ownership may be increased in English-speaking homes, perhaps due to income. Recently there has been an explosion in the availability of DVDs that target this age range that claim to be educational. Decreased access to such programming in Spanish-speaking homes may lead parents in these homes to turn the television on less frequently owing to a perceived lack of age-appropriate content. This may partially explain why viewing amounts differ in the second and third year of life but not in the first. As children age, there are more and more programs available on DVD that claim age-appropriateness. It is also possible that the lack of easily available public Spanish-language television programming targeting young children may be adding to the differences in viewing habits by language. The main US public Spanish-language television stations, Univision and Telemundo, lack programming oriented toward young children. However, this assumes that Spanish-speaking parents prefer that their young chil-

**Table 2. Multivariable Negative Binomial Regression Models of Daily Television Hours by Maternal Language Preference**

<table>
<thead>
<tr>
<th>Children by Hispanic Mother's Language Preference</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1, Child Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-11 mo</td>
<td>Incidence Rate Ratio (95% CI)</td>
<td>Incidence Rate Ratio (95% CI)</td>
<td>Incidence Rate Ratio (95% CI)</td>
</tr>
<tr>
<td>Spanish (Reference)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>English</td>
<td>0.97 (0.62-1.51)</td>
<td>1.61 (1.17-2.22)</td>
<td>1.66 (1.10-2.51)</td>
</tr>
</tbody>
</table>

Abbreviation: CI, confidence interval.

Adapted for child age and sex, Mental Health Inventory–5, and maternal employment status, educational level, age, and marital status.
Children watch Spanish programming. There is some evidence to the contrary. One study found that Spanish-speaking Hispanic individuals believe that children can improve their language skills by watching English-language shows. At this time, it is difficult to conclude what role varying access to valued content may play in the development of viewing habits.

A second hypothesis is that differences in viewing habits by language and child age may be a reflection of varying parental beliefs and values about child television viewing. It is possible that homes that predominantly speak Spanish value television viewing differently than English-speaking homes or may value other activities more than television, thus leading to decreased child viewing. This may particularly explain the differences in viewing by age among the subgroups and why television viewing in the homes of Spanish-speaking Hispanic mothers does not increase over the age groups as much as it does in the homes of white mothers and English-speaking Hispanic mothers. However, interview language, as it was used in this study, is not a specific measure of acculturation, and thus exploration of parental beliefs and values related to television viewing within the Hispanic population is needed.

The impact of social context must also be considered a potential factor that influences the development of viewing habits in young children. For example, factors such as parental social supports, social networks, and time demands may influence one’s parenting habits. Variation in these factors may be associated with English vs Spanish use. This area as well as that of parental beliefs and values have yet to be well explored in relation to television viewing in Hispanic children. Experts support the values have yet to be well explored in relation to television viewing in Hispanic children. Experts support the values have yet to be well explored in relation to television viewing in Hispanic children.

Although our data suggest that daily viewing amounts increase at a slower rate in children of Spanish-speaking Hispanic mothers compared with children of English-speaking Hispanic mothers and white mothers, we cannot conclude this because of the cross-sectional study design. A longitudinal study is needed and should include children through the school years to determine if these early differences persist over time. If viewing does truly increase at a slower rate in children of Spanish-speaking Hispanic individuals, further explorations of the hypotheses presented above are needed, with a specific focus on the interaction of child age and development with these areas. Identification of factors that protect against excessive and increasing viewing in the homes of Spanish-speaking Hispanic individuals may prove beneficial to addressing the higher viewing habits in the homes of English-speaking Hispanic and white individuals.

This work supports the broader need of health research to understand the heterogeneity of the Hispanic population and its influence on health behaviors. This study was limited in that only interview language was used as an indicator of the heterogeneity within the Hispanic population. The influence of culture and social context, for example, was not evaluated, but should be investigated in future studies. Additionally, we believe that the language in which the interview was conducted likely reflects the predominant language in the home; however, this is clearly not a perfect measure. Hence, future studies should include better indicators of language.

There are additional limitations to our study that warrant mention. The first is that our understanding of television viewing in this sample is limited to hours per day. We are unable to look at the content and context related to this viewing, which are important influences on health outcomes. It would be interesting to know, for example, how content varies in the homes of Spanish- vs English-speaking Hispanic individuals. Second, our measure of television viewing by maternal report is most likely not exact. Although a prior study has found such reports to be moderately correlated with actual hours viewed, it is by no means perfect. However, we have no reason to believe that the data are systematically biased if they are not true representations. Additionally, random misreporting would bias our findings toward the null. Finally, we do not have how mothers report television watching in these younger children, whether this means attention given to a program or simply playing in front of the television. Again, we have no reason to believe that the data are systematically biased.

Great attention has recently been given to the need to reduce child television viewing. For interventions that target young Hispanic children, findings from this study emphasize the need to appreciate the heterogeneity of Hispanic populations. In addition, a more in-depth understanding of familial and sociocultural factors that influence television viewing in this population is needed to enhance the efficacy of interventions. Understanding the role of community and neighborhood factors as well as family-level factors, such as the home context, parental beliefs, and parenting practices, is essential.

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