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Perceived Object-Gender in the Bilingual Acquisition of Spanish and English

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Abstract

This study set out to determine whether cross-linguistic interference with respect to object-gender association could be observed in the bilingual acquisition of Spanish and English. I present data that supports the existence of this type of interference. The study gathered data from 10 children, four English monolinguals, four English-Spanish bilinguals, and two Spanish monolinguals. The children were all close in age ranging from 3;04 to 4;07. The study consisted of two separate tasks: name-to-picture matching and naming. Every child was asked to complete each task twice. For the monolingual children, all of the tasks were conducted in their respective languages. The bilingual children performed the tasks first in Spanish and then in English. In both of the tasks, there were patterns uncovered from all three groups that indicated that there was a preference toward using grammatical gender as a basis to assign sociocultural gender to inanimate objects. The English monolingual children showed a higher variability with their responses whereas the Spanish monolinguals showed the lowest variability. When it came to the bilingual children, their responses' variability fell between that of the other two groups. In addition to the responses for the gender-selection naming and matching tasks, other signs that might indicate the presence of crosslinguistic interferences were also observed. Hesitation prior to responding when asked to decide between two objects of the same Spanish grammatical gender was more prominent in the bilingual and Spanish monolingual children. This showed that

the children with a Spanish language system may have been conflicted due to an equal pull to assign both object the same gender. The study also looked for preferences regarding socially conditioned semantic gender versus grammatical gender when presented with objects could be seen as misrepresented by their Spanish grammatical gender. This was designed to determine if Spanish grammatical gender had a greater influence on the children's responses than socio-cultural gender norms. Using the data from these two aspects of the study along with that of the naming and matching tasks, I show evidence of crosslinguistic interference regarding gender-association in children concurrently acquiring English and Spanish. These distinct trends support the claim that English-Spanish bilingual children display signs of cross-linguistic interference.

Keywords: linguistic relativity, bilingual, interference

INTRODUCTION

The claim that the languages we speak influence our perception of the world around us has been explored numerous times in recent history. There have been various studies pertaining to this idea in its weaker form, known as linguistic relativity, that have offered evidence that we are in fact influenced by our language (Ahearn 2012). When it comes to languages with grammatical gender, there is some evidence to support the idea that the speakers of those languages tend to associate grammatical gender with actual gender (Sera, Berge, & Pintado, 1994). On the other hand, speakers of languages that lack grammatical gender, such as English, likely relate gender and objects based on socially conditioned gender-associations. This preference found in speakers of grammatically gendered languages implies that the grammatical gender of an object forms an associated gender for that specific object.

For this study, data from 10 children, four English monolinguals, four English-Spanish bilinguals, and two Spanish monolinguals, was collected and analyzed. The children were all close in age and only ranged from 3;04 to 4;07. The primary purpose of this investigation was to determine whether crosslinguistic interference with respect to object gender-association can be observed in English-Spanish bilingual children of that age. I designed two tasks that each child was asked to complete twice each. Both of these tasks, name-to-picture matching and naming, aimed to uncover patterns from all three groups of children. These patterns would then be used to show distinct trends that stand to support the claim that English-Spanish bilingual children display signs of crosslinguistic interference.

In addition to the responses for the gender-selection naming and matching tasks, I was also interested in other signs that might indicate the presence of crosslinguistic interferences. I checked for hesitation prior to responding as well as a preference for socially conditioned semantic gender versus grammatical gender. Using the data from these two aspects of the study along with that of the naming and matching tasks, I show evidence of crosslinguistic interference regarding gender-association in children concurrently acquiring English and Spanish.

METHOD

Data was collected from 16 children between 3;0 and 4;11. Unfortunately, data from six of the participants had to be excluded from the final results due to a few different factors. Some of the reasons that warranted the exclusion of data were that some children did not understand the questions or tasks presented to them, some children simply did not want to perform the tasks and, therefore, either provided no response or did not put thought into their responses, and other children were simply unable to identify the objects being presented to them. There was also one child who simply listed family members. This invalidated the responses given because the child

comes from a mostly male household. This left data from 10 total children, five males and five females, which could be analyzed to provide accurate results.

TABLE 1. *Monolingual – English*

A		B		C		D	
Age	Sex	Age	Sex	Age	Sex	Age	Sex
4;07	Male	3;11	Female	4;07	Female	4;05	Male

TABLE 2. *Bilingual*

Q		R		S		T	
Age	Sex	Age	Sex	Age	Sex	Age	Sex
4;04	Female	3;04	Male	4;04	Male	3;11	Female

TABLE 3. *Monolingual – Spanish*

Y		Z	
Age	Sex	Age	Sex
4;03	Male	4;07	Female

The English monolingual children A, B, C, and D have all been raised in the United States with English speaking parents and have all had little to no significant exposure to any foreign language. The bilingual children Q, R, S, and T are all of Mexican decent but living in the United States. For all of the bilingual children, both the first language of their parents and the primary language spoken at home is Spanish. It should also be noted that the bilingual children attend a bilingual childcare center where the time is evenly spent exposing them to English and Spanish. Both of the Spanish monolingual children Y and Z have been raised in Spanish speaking countries and have had minimal exposure to foreign languages. Child Y is from Costa Rica and child Z is from Spain; both of which still live in their countries of birth. The ages and sexes of all children can be found in TABLE 1, 2 and 3.

The primary data that I was looking for was the percentage of outcomes that agreed with Spanish grammatical gender. This data is important because it's been observed that the speakers of languages with grammatical gender, such as Spanish, have a tendency to classify objects based on their grammatical gender (Sera et al., 1994). If the bilingual children show these same tendencies and the English monolinguals do not, then that is a clear indicator that the influence from Spanish is affecting their decision-making.

In order to measure and collect this information, I presented the children with 32 total pictures of age appropriate, everyday objects that I had expected them to be familiar with and able to identify. The pictures consisted of 16 objects that are grammatically masculine in Spanish and 16 objects that are grammatically feminine in Spanish. The pictures were spread over 4 sets that were broken down into 2 separate tasks. The full list of the objects used can be found, with their Spanish translations, in APPENDIX A.

Set 1 and Set 3 were name-to-picture matching tasks and were each comprised of five prompts, two pictures each. Set 2 and Set 4 were naming tasks and were each comprised of six prompts, one picture each. All of the sets contained an equal number of grammatically masculine and feminine objects with their order of appearance being varied. All children did, however, receive the same prompts in the same order.

I intentionally chose to present the name-to-picture matching task first to give the children an example as to what type of 'names' I would be asking for in the following exercises: Set 2 and Set 4. This was to avoid, or at least limit, 'names' given as responses that wouldn't be typically assigned to animate objects. I also wanted to ensure that the children understood what was meant when they were asked what the object's name should be so that they didn't simply re-identify what the object was.

In the cases where the child's response was either unintelligible or was not necessarily a 'name,' I would ask the child why they had selected that specific name so that the child would provide further details. I would then listen to see if the child was using masculine or feminine pronouns to describe the object.

For the English monolingual children, all prompts from all sets were presented in English. For the bilingual children, Set 1 and Set 2 were presented in Spanish and Set 3 and Set 4 were presented in English. I purposely chose this order with the aim of giving the illusion that I didn't speak English. This was with the intention of promoting the use of Spanish throughout the sets and to keep them from defaulting to English. For the Spanish monolingual children, all prompts from all sets were presented in Spanish.

For Set 1 and Set 3, the children were presented with each prompt which involved two pictures of different Spanish grammatical genders. For each prompt, the child was first asked to identify the two objects in order to be sure that the child was familiar with them. Once they correctly identified the objects, they were then provided either a masculine or a feminine name and asked to select which object that name should be assigned to. The prompts for both sets as well as the names that were presented can be found in APPENDIX B.

There were two prompts, one in Set 1 and one in Set 3, which did not involve two objects of different grammatical genders. Prompt 3 involved two grammatically feminine objects and a feminine name was provided to the child. Prompt 15 involved two grammatically masculine objects and a masculine name was provided to the child. The child's object-selection for both of these prompts were not included in the response data because they would have shown an accurate prediction by Spanish grammatical gender regardless of their selection. Instead, these two prompts served as a means through which I could note whether the child hesitated before

giving their response. This was significant because I expected, if grammatical gender influences object gender-association, to see a moment of conflict for the bilingual and Spanish monolingual children and not for the English monolingual children.

For Set 2 and Set 4, the children were presented with one picture at time and first asked to identify what the object was. Once they completed this step, they were then asked to assign a name of their choosing to the object which was then recorded. The prompts for both sets can be found in APPENDIX B.

There were two prompts, one in Set 2 and one in Set 4, where the objects shown had, what could be considered, misrepresentative grammatical genders. This meant that the socially conditioned gender-association for the objects disagreed with the objects' grammatical genders. Prompt 9 involved a picture of a dress which is grammatically masculine in Spanish. Prompt 18 involved a picture of a necktie which is grammatically feminine in Spanish. For these two prompts, I was curious about whether socially conditioned semantic relationships had a stronger influence on naming than Spanish grammatical gender might.

RESULTS

The mean percentage of outcomes predicted by Spanish grammatical gender was calculated for each set with the results being shown in TABLE 4. In every case, Spanish grammatical gender predicted the outcomes of the Spanish monolingual children more than that of the bilingual children. This was nearly also the case for the outcomes of the bilingual children versus that of the English monolingual children. Set 2 yielded a higher percentage of accurate predictions by Spanish grammatical gender for the English monolingual children than that of the bilingual children. This outlying figure is muted when looking at the mean percentage.

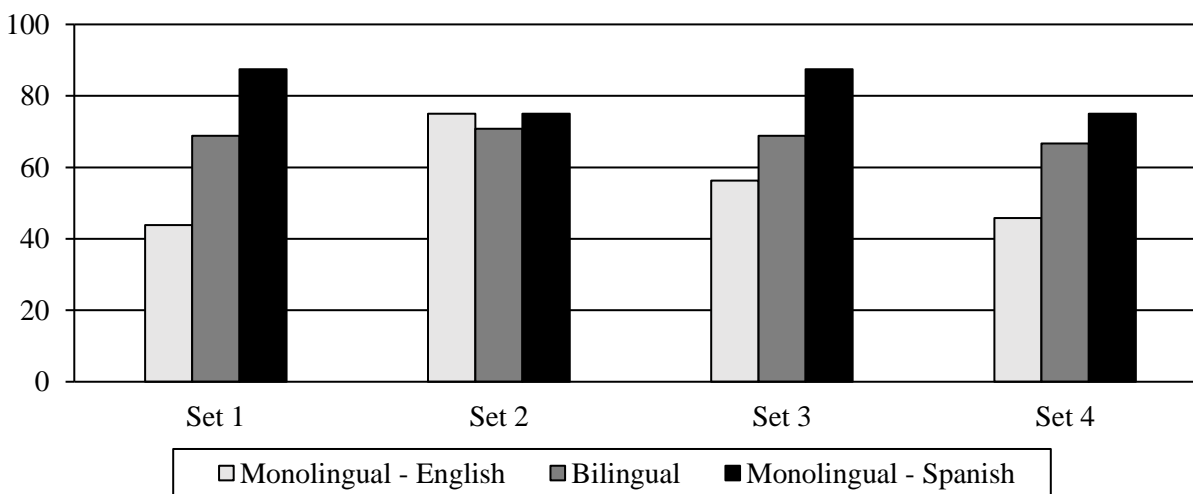
TABLE 4. *Percentage of outcomes predicted by Spanish grammatical gender across all sets*

	Monolingual – English	Bilingual	Monolingual - Spanish
Set 1	43.8	68.8	87.5
Set 2	75.0	70.8	75.0
Set 3	56.3	68.8	87.5
Set 4	45.8	66.7	75.0
Mean	56.3	68.8	80.0

The mean percentages of accurate predictions between each set and by each child group generally follow the “staircase-like” trend that can be seen in FIGURE 1. The Spanish monolingual children consistently have the highest percentage but for the other two groups, there’s one instance that causes some trouble. With one exception, the English monolingual children almost always have the lowest mean percentage and the bilingual children almost always have a mean percentage between the other two.

The exception to this trend is found in Set 2. For that set, the English monolingual children had a higher mean percentage than the bilingual children. While the difference between the two is less than 5%, it still shows an inconsistency in the data.

FIGURE 1. *Mean percentage of outcomes predicted by Spanish grammatical gender by set*



This inconsistency actually stands to support the original claim. As seen in FIGURE 2, the mean percentages across all sets for the bilingual and Spanish monolingual children remain relatively consistent. Conversely, the mean percentages for the English monolinguals fluctuates greatly between sets. This data can be seen in TABLE 5.

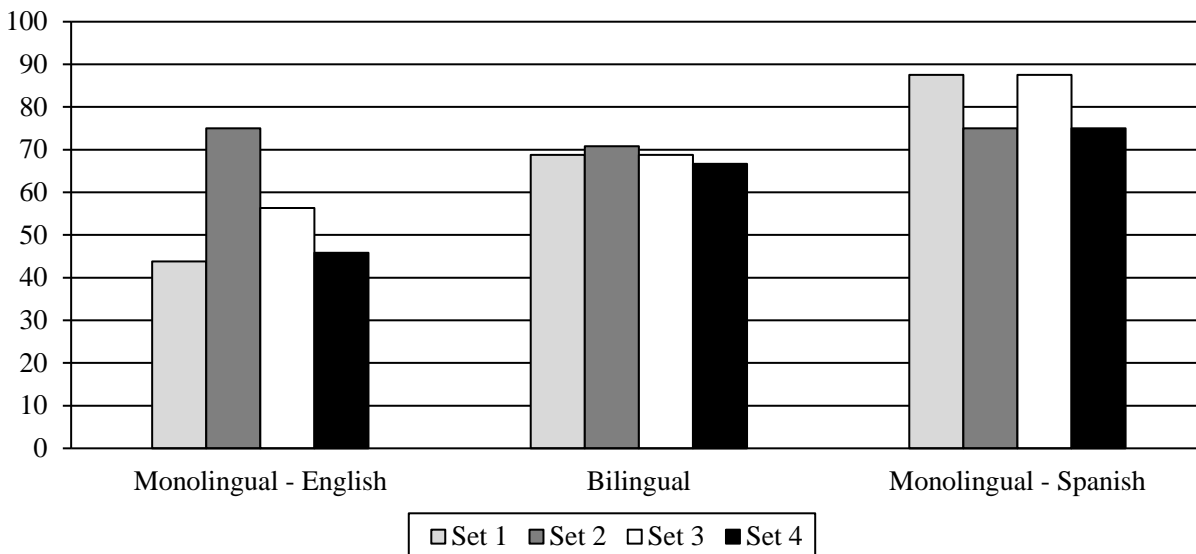
Furthermore, the mean range for the English monolingual children was 56.3% whereas the Spanish monolinguals' was 29.2%. The bilingual children had a range of 41.7%. This greater inconsistency should be expected with speakers of a language without grammatical gender because there isn't any subconscious preference based on the language's linguistic features. This held true, especially when looking at the data from the bilingual and Spanish monolingual children who maintained lower rates of variability with their responses.

TABLE 5. *Percentage of outcomes predicted by Spanish grammatical gender by child*

	A	B	C	D	Q	R	S	T	Y	Z
Set 1	0.0	50.0	25.0	100.0	50.0	50.0	100.0	75.0	100.0	75.0
Set 2	50.0	83.3	66.7	100.0	66.7	83.3	66.7	66.7	66.7	83.3
Set 3	50.0	25.0	75.0	75.0	75.0	100.0	75.0	25.0	75.0	100.0
Set 4	50.0	50.0	50.0	33.3	50.0	66.7	66.7	83.3	66.7	83.3
Mean	37.5	52.1	54.2	77.1	60.4	75.0	77.1	62.5	77.1	85.4

This inconsistency among the English monolingual children is most pronounced when looking at the standard deviations in the data. The highest standard deviation of 27.4% comes from the English monolingual children, then followed by the bilingual children and the Spanish monolingual children at 19.1% and 13.2% respectively. This higher standard deviation is caused by the high variability in the responses from the English monolingual children thus supporting that the consistency in bilinguals is a result of influences from their two languages.

FIGURE 2. Mean percentage of outcomes predicted by Spanish grammatical gender by child group



In addition to the responses pertaining to gender-association through name related tasks, I was also interested in whether or not the children showed any hesitation that might be brought on by Spanish grammatical gender. The data pertaining to hesitation can be found in APPENDIX C.

When presented with the Prompt 3 from Set 1, there were no instances of hesitation observed for the English monolingual children. Conversely, both of the Spanish monolingual children and two of the bilingual children hesitated before making their selection. Between both pictures, there was a general preference for selecting the apple over the pumpkin. Only three children selected the picture of the pumpkin, one child from each group.

For Prompt 15 in Set 3, there were only two children that showed signs of hesitation. One of which was an English monolingual and the other was a bilingual. This lower rate of hesitation could have been caused by a lack of any sociocultural or linguistic consideration at all from the children due to them becoming impatient by that point in the interview. If this was the case, then it should have been the case that the majority of the children selected the first picture with a

higher rate. This is based off of Dana Carney's study which concluded that humans prefer to select the first option presented to them (2012).

Another explanation for the lower rate of hesitation could have been a flaw with the object pair that I chose: a paintbrush and a hammer. Out of all the children, 60% assigned the masculine name to the hammer. It's possible that a hammer is an object that is decidedly more masculine than a paintbrush thus creating a preference for that selection.

With this in mind, let's look at the overall selection patten. Three out of the four English monolinguals selected the hammer over the paintbrush indicating that there was a greater preference to assign a masculine name to a decidedly masculine object. For both the bilinguals and Spanish monolinguals, half selected the hammer and half selected the paintbrush. This could be an indicator that grammatical gender played a role in their decision-making more than socially conditioned semantic gender-association. This would stand to say that the presence of grammatical gender could have been dampening the effects of any sociocultural ideologies that the children may have.

Lastly, I tested to see if socially conditioned semantic gender had a greater effect on naming than Spanish grammatical gender. When presented with Prompt 9 from Set 2, which was a green dress, 80% of the children assigned a masculine name. What's interesting about this outcome is that three out of the four English monolingual children assigned a masculine name to the dress.

It could be the case that green is a decidedly masculine color in relation to socially conditioned norms and thus provoked primarily masculine names. This could further be explained if it's the case that the children are still too young to have any socially conditioned

gender-association for certain objects, such as a dress. Therefore, they may have felt a stronger bias based on the objects color, one which they might be more likely to associate with a certain gender at that age.

When presented with Prompt 18 from Set 4, which was a red necktie, 50% of the children assigned names that agreed with the Spanish grammatical gender. Only one child from each of the monolingual groups assigned a feminine name to the picture. For the bilingual group, three of the children assigned the picture a feminine name.

The results for this prompt keep in line with the idea that English monolinguals have a stronger preference for naming objects based on socially conditioned associations where as those with exposure to Spanish are likely to break that trend in favor of the object's grammatical gender.

It should be noted that three out of the four bilingual children responded in Spanish when first asked to identify the object. This could indicate that for that specific object, they don't have as evenly distributed influence from English and Spanish.

DISCUSSION

The results of this investigation are in line with other studies, such as Müller and Hulk (2001), Jarvis (2011), or Sera et al. (1994), that have looked at similar areas of linguistic relativity. The pronounced similarities between the responses given by the bilingual children and the Spanish monolingual children do indicate that Spanish's grammatical genders are influencing the decisions and preferences of the children.

These similarities are a clear indicator of there being crosslinguistic influence because of the relatively consistent tendency for the bilingual children to either assign names or select

objects that agreed with Spanish's grammatical genders. This consistency in data contrasts perfectly with that of the English monolingual children who displayed a high rate of variability with their responses.

Unfortunately, the lower number of Spanish monolingual child participants may have yielded skewed results. Since the results from the bilingual children were being compared to that of the Spanish monolinguals, it may have caused a false correlation between the two. Moreover, I do not believe that the results pertaining to Prompt 9 and Prompt 18 are enough evidence to solely support the original claim. After analyzing the data from these prompts, I simply wanted to show that there may be evidence in other areas of gender-association that align with the primary data. The greatest flaw with these prompts was the picture selection. Since green may be a decidedly masculine color due to socially conditioned associations, the responses given may have been a reflection of color gender-association rather than what was actually being tested.

This feeling is also true for the data pertaining to hesitation for Prompt 3 and Prompt 15. Both of these prompts, which tested for hesitation, may have yielded inaccurate responses due to the flaw in the picture selection, especially that of Prompt 15. If I had chosen two objects that were less likely to have a sociocultural gender-association, the rate of hesitancy may have been drastically different.

Lastly, a larger pool of participants would have greatly strengthened my findings. Having only 10 children to use data from greatly limited the statistical values that I calculated. It also limited the accuracy of the statistics. In addition to a larger data pool, it would be beneficial to conduct the same tests with the same children at a later date in order to see if it yielded different results. This would rule out the argument that the data from the children was mere coincidence.

CONCLUSION

This investigation sought to determine if there is any evidence of crosslinguistic interference that occurs with respect to object gender-association during the bilingual acquisition of Spanish and English. The relatively consistent mean percentage of accurate predictions by Spanish grammatical gender for the bilingual children and lack thereof for the English monolingual children indicates that there is some preference for speakers of Spanish to associate objects with a particular gender based on their grammatical gender. All in all, it stands to reason to conclude that there does seem to exist crosslinguistic interference with respect to object gender-association in English-Spanish bilingual children.

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APPENDIX A*Object list*

English Word	Spanish Equivalent(s)		English Word	Spanish Equivalent(s)	
Airplane	Avión, Aeroplano	m	Flower	Flor	f
Apple	Manzana	f	Hammer	Martillo, Mazo, Combo	m
Ball	Pelota, Bola	f	Hat	Sombrero, Gorro	m
Bed	Cama	f	Key	Llave	f
Bell	Campana, Campanilla	f	Lamp	Lámpara	f
Bicycle	Bicicleta, Bici, Bicla	f	Moon	Luna	f
Book	Libro	m	Necktie	Corbata	f
Bread	Pan	m	Paintbrush	Pincel	m
Cactus	Cactus, Cacto	m	Pencil	Lápiz	m
Car	Coche, Carro, Auto	m	Pumpkin	Calabaza	f
Cheese	Queso	m	Racquet	Raqueta	f
Clock	Reloj	m	Sock	Piedra, Roca	f
Coin	Moneda	f	Shoe	Zapato	m
Cup	Taza	f	Sun	Sol	m
Dress	Vestido	m	Telephone	Teléfono	m
Flag	Bandera	f	Tree	Árbol, Palo	m

m indicates masculine Spanish grammatical gender

f indicates feminine Spanish grammatical gender

APPENDIX B

Prompts for all sets

Set 1 / Name-to-Picture Matching				
Prompt 1	Airplane ^m	Bicycle ^f	“Matthew”	“Mateo”
Prompt 2	Racquet ^f	Pencil ^m	“Caitlin”	“Sofía”
Prompt 3*	Apple ^f	Pumpkin ^f	“Lauren”	“Lucía”
Prompt 4	Sun ^m	Moon ^f	“Jacob”	“Jacobo”
Prompt 5	Clock ^m	Lamp ^f	“Zachary”	“Alejandro”
Set 2 / Naming				
Prompt 6	Car ^m			
Prompt 7	Hat ^m			
Prompt 8	Cup ^f			
Prompt 9	Dress ^m			
Prompt 10	Key ^f			
Prompt 11	Rock ^f			
Set 3 / Name-to-Picture Matching				
Prompt 12	Coin ^f	Shoe ^m	“Jennifer”	“María”
Prompt 13	Bread ^m	Bed ^f	“Peter”	“Pedro”
Prompt 14	Book ^m	Flag ^f	“Cassidy”	“Selena”
Prompt 15*	Paintbrush ^m	Hammer ^m	“Joseph”	“José”
Prompt 16	Bell ^f	Tree ^m	“Emily”	“Emilia”
Set 4 / Naming				
Prompt 17	Ball ^f			
Prompt 18	Necktie ^f			
Prompt 19	Cheese ^m			
Prompt 20	Cactus ^m			
Prompt 21	Flower ^f			
Prompt 22	Telephone ^m			

* responses not included in percentage of predictions by Spanish grammatical gender

^m indicates Spanish masculine grammatical gender

^f indicates Spanish feminine grammatical gender

APPENDIX C

Responses for all prompts from all sets

Prompt (English)			A	B	C	D	Q	R	S	T	Y	Z
1	Airplane ^m	Bicycle ^f		Y		Y	Y		Y	Y	Y	Y
2	Racquet ^f	Pencil ^m				Y		Y	Y		Y	Y
3*	Apple ^f	Pumpkin ^f	L	L	L	R	L	L ^H	L	R ^H	R ^H	L ^H
4	Sun ^m	Moon ^f		Y		Y			Y	Y	Y	
5	Clock ^m	Lamp ^f			Y	Y	Y	Y	Y	Y	Y	Y
6		Car ^m	Y		Y	Y	Y	Y	Y			Y
7		Hat ^m	Y	Y	Y	Y	Y	Y	Y	Y	Y	
8		Cup ^f		Y		Y		Y				Y
9		Dress ^m		Y	Y	Y	Y		Y	Y	Y	Y
10		Key ^f	Y	Y	Y	Y	Y	Y		Y	Y	Y
11		Rock ^f		Y		Y		Y	Y	Y	Y	Y
12	Coin ^f	Shoe ^m		Y	Y	Y	Y	Y	Y	Y	Y	Y
13	Bread ^m	Bed ^f	Y		Y	Y	Y	Y	Y		Y	Y
14	Book ^m	Flag ^f			Y		Y	Y			Y	Y
15*	Paintbrush ^m	Hammer ^m	R	R	R ^H	L	L	R ^H	L	R	L	R
16	Bell ^f	Tree ^m	Y			Y		Y	Y			Y
17		Ball ^f			Y	Y		Y	Y	Y	Y	
18		Necktie ^f			Y		Y		Y	Y		Y
19		Cheese ^m	Y	Y				Y		Y	Y	Y
20		Cactus ^m	Y	Y			Y	Y	Y		Y	Y
21		Flower ^f	Y	Y	Y				Y	Y	Y	Y
22		Telephone ^m				Y	Y	Y		Y		Y

* responses not included in percentage of predictions by Spanish grammatical gender

Y indicates response's gender matched that of the Spanish grammatical gender

L indicates selection of object on left (for Prompt 3 and Prompt 15 only)

R indicates selection of object on right (for Prompt 3 and Prompt 15 only)

^H indicates instance of hesitation prior to response^m indicates Spanish masculine grammatical gender^f indicates Spanish feminine grammatical gender