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Authors

Ronderos, Camilo R.

Zhang, Yayun

Rubio-Fernàndez, Paula

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Weighted parameters in demonstrative use: The case of Spanish teens and adults

Camilo R. Ronderos (c.r.ronderos@ifikk.uio.no)

Department of Philosophy, Classics, History of Art and Ideas, University of Oslo, Norway

Yayun Zhang (yayun.zhang@mpi.nl)

Language Development Department, Max Planck Institute for Psycholinguistics, The Netherlands

Paula Rubio-Fernandez (paula.rubiofernandez@mpi.nl)

Multimodal Learning Department, Max Planck Institute for Psycholinguistics, The Netherlands

Abstract

All languages have demonstratives—grammatical words like ‘this’ and ‘that’ in English, which are a universal tool to establish joint attention on a referent. Demonstratives are acquired early, but their mature use has a protracted development, with recent studies showing that 10- and 11-year-old children do not yet use demonstratives like adults do. Here we investigated demonstrative use by teenagers (ages 12–17) and adults with a focus on two social parameters affecting demonstrative choice in Spanish: Listener Position and Listener Attention. The results of two experiments using an online demonstrative-choice task revealed that teenagers use Spanish demonstratives comparably to adults in most conditions. However, teenagers seem to still be adjusting the relative weight of the social parameters affecting demonstrative choice in Spanish, supporting the view that acquiring and regularly using demonstratives trains social cognition through communicative interaction.

Keywords: demonstratives, spatial cognition, social cognition, attention, weighted parameters.

Introduction

Demonstratives – grammatical words like ‘this’ and ‘that’ or ‘here’ and ‘there’ in English, have been studied in numerous disciplines, ranging from philosophy (Kaplan, 1990; Nowak, 2021), linguistics (Ahn, 2022; Roberts, 2003) and psychology (Coventry et al., 2008; Kemmerer, 1999), to typology (Diessel, 1999; Levinson et al., 2018), language acquisition (Clark, 1978; Diessel and Monakhov, 2023) and cognitive science (Van der Sluis and Krahmer, 2007; Woensdregt et al., 2022). Traditional accounts still in vogue today treat demonstratives as spatial communication systems (Coventry et al., 2023; Diessel, 2014) indicating the location of a referent relative to a source or *origo* (Bühler, 1934). Traditional analyses focus on demonstratives’ spatial meaning but treat these words as inherently perspectival in so far as the *origo* can be either the speaker, the listener or both, depending on the language (e.g., the Spanish proximal ‘este’ indicates proximity to the speaker, the medial ‘ese’ indicates distance from the speaker but proximity to the listener, and the distal ‘aquel’ indicates distance from both; Rubio-Fernandez (2022)).

More recent work on demonstratives has highlighted their social function to establish joint attention (Diessel, 2006, 2013) and their fundamental role in social interaction (Diessel and Coventry, 2020) and multimodal communication (Özer et al., 2023; for an influential social account of demonstratives, see Peeters and Özyürek, 2016). Typological studies have also moved beyond spatial accounts of demonstratives, extensively documenting that, depending on the language, demon-

stratives may indicate not only the distance, but also the altitude, familiarity, position, reachability or visibility of a referent from the perspective of the speaker, the listener, or both (see Levinson et al., 2018).

Since demonstratives encode different relational values and their use may require shifting perspectives, it has recently been argued that their acquisition should help the development not only of early joint attention, but also of later perspective-taking skills through face-to-face communicative interaction (Rubio-Fernandez, 2021). The aim of our study was to investigate the interdependence between language and social cognition (Rubio-Fernandez, 2023) by comparing the use of demonstratives by teenage and adult native speakers of Spanish in relation to two social parameters: the listener’s spatial location and the listener’s focus of attention.

Demonstrative Acquisition and Development

Early studies of the acquisition of English demonstratives highlight toddlers’ difficulties with switching perspectives between demonstrative production, which is supposed to be egocentric (e.g., for the speaker, ‘this one’ means *the one close to me*) and demonstrative comprehension, which should be anchored on the speaker (e.g., for the listener, ‘this one’ means *the one close to you*; Charney, 1979; Clark, 1978; Clark and Sengul, 1978; de Villiers and de Villiers, 1974; Webb and Abrahamson, 1976). Based on single-case diaries and some observational data, Clark (1978) argues that demonstratives are amongst the earliest and most frequent words in first language acquisition.

More recent studies have tried to confirm Clark’s (1978) claims that demonstratives are among the first 50 words English-speaking children use and that ‘that’ and ‘there’ are very frequent during the one-word stage. The results of parental reports have challenged Clark’s conclusions (Caselli et al., 1995; Fenson et al., 1994; González-Peña et al., 2020), but these reports are not reliable when it comes to grammatical words (Salerni et al., 2007). Following up on this work, two recent studies investigated early demonstrative acquisition using the CHILDES database (MacWhinney, 2000) with mixed results. González-Peña et al. (2020) report a small corpus analysis of the spontaneous speech of 18- to 24-month-old English and Spanish speaking toddlers, which revealed that the majority of children from both language groups produced at least one demonstrative from 18 months, but not all

of them did until 24 months. Diessel and Monakhov (2023) used extensive corpus data of spontaneous child speech to investigate the acquisition of demonstratives in three European (English, French, Spanish) and four non-European languages (Japanese, Chinese, Hebrew, Indonesian) between age 1;0 and 6;0 years and replicated and extended Clark's (1978) findings: demonstratives are among the earliest and most frequent child words across the seven languages investigated, but their frequency decreases with age and MLU.

Regarding demonstrative development during childhood, Guijarro-Fuentes et al. (2022) also used the CHILDES database to examine the case of Spanish with children between the ages of 2;0 and 10;0 years. These authors also observed an overall decrease in demonstrative use with age, although young children started with a preference for the proximal form 'este,' which then evolved into a preference for the medial 'ese'. Importantly, the use of the distal demonstrative 'aquel' was rare at any age point, even in adulthood. Guijarro-Fuentes et al. (2022) conclude that demonstratives might be early acquired (Clark, 1978) but their development is protracted, with adult use patterns not yet emerging at age 10 years.

González-Peña et al. (2022) investigated at what age English demonstrative production is sensitive to both distance and ownership in 7-year-olds, 11-year-olds and adults, who completed a laboratory memory task that required using spatial demonstratives. In line with the conclusions of Guijarro-Fuentes et al. (2022) for Spanish demonstratives, the results of González-Peña et al. (2022) suggest that adult-like English demonstrative production starts around 7 years of age but continues to develop beyond 11 years. The protracted developmental trajectories reported in these two recent studies motivate the investigation of demonstrative use in adolescence, which was the goal of our study.

Demonstrative Acquisition and Joint Attention

Attention regulation is necessary for two interlocutors to focus on the same object and 2-year-old Spanish toddlers have been shown to use pointing and demonstratives to orient their mother's attention towards an intended referent (Rodrigo et al., 2004). Contrary to the view of demonstratives as a universal tool to establish joint attention on a referent (Rubio-Fernandez, 2021), Todisco et al. (2021) have recently argued that joint attention is a *precondition* for the use of demonstratives and pointing gestures. However, Todisco and colleagues drew that general conclusion from a very specific communicative activity with Italian mother-child dyads, which relies indeed on joint attention; namely, shared picture book reading. It is therefore an open empirical question whether joint attention is a precondition for the use of demonstratives and pointing gestures in more dynamic settings (e.g., while playing with various toys in a room or navigating outdoor spaces).

Skarabela et al. (2013) observed an early sensitivity to joint attention in 2;0 – 3;6 year-old children's use of Inuktitut demonstratives: when the children in their dataset were

engaged in joint attention with their interlocutors, they used demonstratives as clitics (reduced form) rather than as independent words (full form)—a distinction analogous to the use of pronouns vs full nouns depending on the accessibility of the antecedent. Küntay and Özyürek (2006), on the other hand, observed protracted sensitivity to joint attention in 4- and 6-year-old children's use of Turkish demonstratives, relative to adults. Like Spanish, Turkish has a 3-way demonstrative system, but unlike in Spanish, the proximal 'bu' and distal 'o' signal near and far space from the speaker's location, respectively, while the medial form 'şu' is used for referents not yet in joint attention. Küntay and Özyürek (2006) observed that adultlike use of the Turkish attention-correction demonstrative 'şu' is not yet mastered at the age of 6, while the distance contrast marked by the proximal and distal demonstratives is acquired earlier.

The protracted sensitivity to joint attention in demonstrative use observed by Küntay and Özyürek (2006) with Turkish children may seem to contradict the early sensitivity observed by Skarabela et al. (2013) with younger Inuktitut-speaking children. However, it is important to bear in mind that children mastering Turkish demonstratives need to make different use of their three forms (since they have separate spatial vs attention-correction functions), whereas in Inuktitut, the same demonstratives can be used as clitics (attached to an adjacent word) or as independent words. In this respect, adultlike use of Turkish demonstratives is more demanding than that of Inuktitut demonstratives.

In a recent study with Spanish-speaking children between 3 and 8 years and adults, Shin and Morford (2020) observed that in misunderstanding trials (in which the experimenter picked up the wrong puzzle piece following the participant's request), children provided more elaborated responses than in successful trials, but their demonstrative use did not vary. Adult controls, on the other hand, used the proximal demonstrative 'esta' ('this one') in misunderstanding trials, showing an intersubjective use of Spanish demonstratives to *repair communication*, above and beyond establishing a spatial contrast. Therefore, the results of Shin and Morford (2020) show protracted development of intersubjective demonstrative use in Spanish, in line with the results of Küntay and Özyürek (2006) in Turkish. In order to further investigate this slow developmental trajectory, our study tested the role of joint attention in demonstrative use by Spanish teens and adults.

Weighted Social Parameters

Using demonstratives in Spanish requires monitoring not only the location of the target referent relative to the speaker's own position, but also the position of the listener. Thus, if the referent is far from the speaker's position, the choice between the medial 'ese' and the distal 'aquel' depends on whether or not the listener is close to the referent. Following computational work by Woensdregt et al. (2022), we will treat Object Position (relative to the speaker) and Listener Position (relative to the target object) as two of the parameters that

determine demonstrative use in Spanish.

Two recent studies using an online demonstrative-choice task across various languages have shown that Object Position and Listener Position affect demonstrative choice not only in Spanish, but also in Japanese and Portuguese (Rubio-Fernandez, 2022; Woensdregt et al., 2022). However, the same online task revealed that the Listener Position parameter does not affect demonstrative choice in Catalan, English, Italian and Turkish. Importantly, Object Position is an “ego-centric” parameter that establishes referent distance from the speaker’s position, whereas Listener Position is a social parameter that requires monitoring one’s interlocutor’s spatial location (see sample scenarios in Fig. 1).

Another social parameter that has been shown to affect demonstrative choice in all the above languages is Listener Attention (Rubio-Fernandez, 2022; Woensdregt et al., 2022). As predicted by Küntay and Özyürek (2006), Turkish speakers used the medial demonstrative ‘şu’ when the listener was looking at the wrong object (Rubio-Fernandez, 2022). However, speakers of all the other languages used their proximal and distal demonstratives flexibly for attention correction. Thus, when the listener was looking closer from the target object, participants showed a preference for the distal form to ‘push’ the listener’s attention (gloss: *Look over there!*), whereas when she was looking further from the target, they used the proximal form to ‘pull’ her attention (gloss: *Look over here!*)—for sample scenarios, see Fig. 2.

While both Listener Position and Listener Attention are social parameters, only Listener Attention is *mentalistic*: it re-

quires some representation of the listener’s mind, which relies on social cognition. Thus, we predict that if Spanish teenagers make different use of their demonstrative system relative to adults, it will be most noticeable in their estimation of the Listener Attention parameter than their estimation of the Listener Position parameter (which only requires spatial cognition). Here we adopt the view that cross-linguistic differences in demonstrative systems stem from different parameters carrying different weights across languages (Rubio-Fernandez, 2024). Thus, the Listener Position parameter carries more weight in Spanish than in English, while the Listener Attention parameter may carry more weight in Turkish than in other languages that do not have a lexicalized demonstrative for attention correction. We will also test the hypothesis that developmental trajectories in the mastery of demonstrative systems may also stem from different parameters carrying different weights during pragmatic development (Rubio-Fernandez, 2024).

Experiment 1 compared teens’ and adults’ use of Spanish demonstratives in an online task manipulating both object and listener position. If any developmental differences emerge, we predict that they will be in teenagers’ use of the medial ‘ese’ and the distal ‘aquel’, which rely on both the Object Position and Listener Position parameters. In Experiment 2, we aligned object and listener position and manipulated instead the listener’s attention focus (whether it was on the target, or on another object that was either closer or further from the target). Here we were interested in whether teenagers use Spanish demonstratives differently from adults when trying to redirect the listener’s attention towards the referent.

Experiment 1

Methods

Participants: Fifty teenage children (ages: 12-15; M=13) were recruited in person in a school in Northern Spain and 51 adult controls were recruited through Prolific. Informed consent was obtained from parents and adult participants. All participants were native Spanish speakers.

Materials: A series of 16 pictures were created showing a table with four identical objects and a woman on the other side of the table (see Fig. 1). The speaker in each display represented the participant and the woman represented their friend. The cover story for the task was that the participant was tidying the table and asked their friend to pass them the objects on the table one by one.

To ensure the most naturalistic results, the pictures were taken with a set of SMI eye-tracking glasses placed on the speaker, hence accurately corresponding with the speaker’s visual field. The target object was indicated by the speaker’s pointing gesture, which was also in the picture frame.

Speaker position was fixed across trials (lower right corner of the table, or Position 0), whereas target object position varied along the table (Positions 0–3, moving left wise). The friend’s position also varied across trials (Positions 0–3), resulting in a fully-crossed 4×4 design (Object Position × Lis-



Figure 1: Sample scenarios from Experiment 1 showing the target in Position 1 and the listener in Positions 0-3.



Figure 2: Sample scenarios from Experiment 2 showing the target in Position 2 and the listener looking at target, closer and further.

tener Position).

Procedure: The task was administered online to both age groups, but it was distributed in person to the teenagers and remotely to the adults. Participants were asked to play the role of the speaker and complete the request in the speech bubble ('Ahora necesito...'—Now I need...) by clicking one of three radio buttons with Spanish demonstratives: 'este' (this one), 'ese' (that one) or 'aquel' (that one over there). The instructions highlighted that participants should treat the scene as an interactive scenario, and imagine what their natural choice would be in each trial.

The task was very short (16 trials / approx. 4 min.). Only one trial of each type (Object Position $\times$ Listener Position) was included in the task, with trials being randomized individually, in order to reduce the chance that participants would develop response strategies during the task.

Results

Statistical analyses tested for the effect of Listener Position by Age Group on demonstrative choice for each Object Position separately (for data visualizations, see Fig. 3 and Fig. 4). In Object Position 0 (which was the speaker's fixed position), we tested for the use of the proximal 'este', whereas in Object Positions 1 and 2, we tested for the use of the medial 'ese', and in Object Position 3, we tested for the use of the distal demonstrative 'aquel'.

Position 0: We ran logistic regression models with choice of the correct demonstrative as the dependant measure for each of our analyses (in the proximal case, 'este' = 1; 'ese' / 'aquel' = 0). For Position 0, The model included random intercepts by Participants and Items (but no random slopes due to model convergence issues). In all models in Experiment 1, Age Group was sum-contrast coded and Listener Position was treatment-contrast coded with Listener Position 0 coded as the baseline. The model output revealed a significant difference between Listener Position 0 and Listener Position 3 ($\beta = -1.538$, $z\text{-value} = -2.557$, $p < 0.0107$).

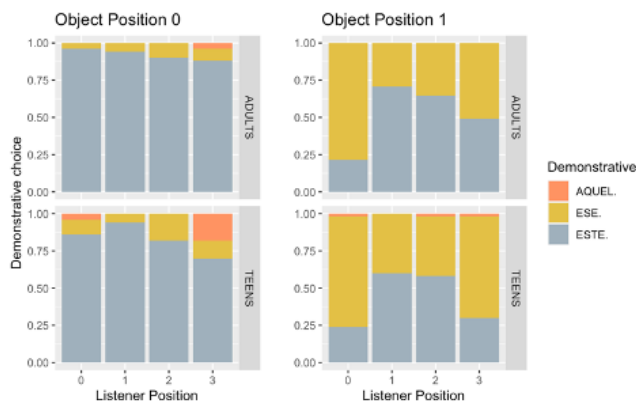


Figure 3: Mean demonstrative choice in Experiment 1 in Object Position 0 and Object Position 1 by Age Group.

Position 1: We ran a logistic regression model with choice of the medial demonstrative as the dependant measure ('ese' = 1; 'este' / 'aquel' = 0). The model included random intercepts by Participants and Items, as well as a random slope for Listener Position by Participants and Age Group by Items. The model output revealed a significant difference between Listener Position 0 and Listener Position 1 ($\beta = -2.580$, $z\text{-value} = -5.841$, $p < 0.0001$), Listener Position 2 ($\beta = -2.386$, $z\text{-value} = -5.568$, $p < 0.0001$) and Listener Position 3 ($\beta = -1.091$, $z\text{-value} = -2.877$, $p < 0.0041$).

Position 2: We ran the same logistic regression model as in Position 1 and the model output revealed a significant difference in the use of the medial 'ese' between Listener Position 0 and Listener Position 1 ($\beta = 1.558$, $z\text{-value} = 4.286$, $p < 0.0001$) and Listener Position 3 ($\beta = 1.753$, $z\text{-value} = 4.392$, $p < 0.0001$). The interactions between Listener Position 2 and Age Group ($\beta = 1.640$, $z\text{-value} = 2.495$, $p < 0.0127$) and Listener Position 3 and Age Group ($\beta = 2.446$, $z\text{-value} = 3.117$, $p < 0.0019$) were also significant.

Position 3: We ran the same logistic regression model as in Positions 1 and 2, but with choice of the distal demonstrative as the dependant measure ('aquel' = 1; 'este' / 'ese' = 0). The model output revealed a significant difference between Listener Position 0 and Listener Position 1 ($\beta = 8.915$, $z\text{-value} = 4.363$, $p < 0.0001$), Listener Position 2 ($\beta = -2.820$, $z\text{-value} = -4.807$, $p < 0.0001$) and Listener Position 3 ($\beta = -2.687$, $z\text{-value} = -4.601$, $p < 0.0001$).

Experiment 2

Methods

Participants: A different group of 112 teenage children (ages: 12-17; $M = 14.5$) were recruited in person in the same school in Northern Spain and 112 adult controls were recruited through Prolific. Informed consent was obtained from parents and adult participants. All participants were native Spanish speakers.

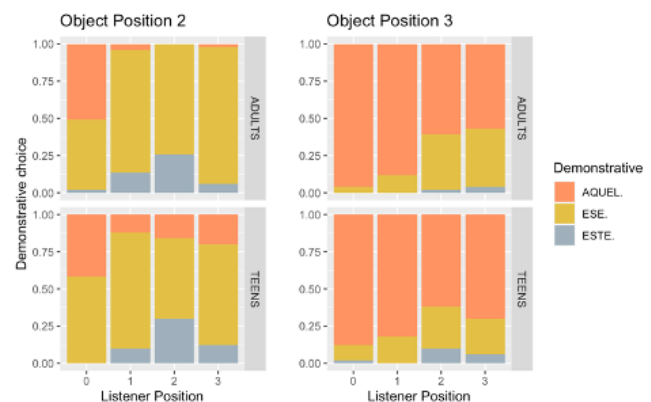


Figure 4: Mean demonstrative choice in Experiment 1 in Object Position 2 and Object Position 3 by Age Group.

Materials: A new series of 18 pictures similar to the ones in Experiment 1 were created for Experiment 2 using the same setup and eye-tracking glasses on the speaker. There were only three differences in the pictures: the position of the listener was always parallel to the target (i.e. object and listener position were not crossed). Object/Listener Position only ranged across Positions 1–3 on the table and was counterbalanced across trials (6 trials per position). The listener was looking at the target object in half the trials (At Target condition) but was looking at the wrong object in the other half (Closer and Further conditions).

Target and listener did not appear in Position 0 because the proximal demonstrative ‘este’ would be used in that position both in the At Target and Further conditions, weakening any evidence of flexible demonstrative use for attention correction. On the other hand, the use of the three demonstratives would be more flexible in Positions 1–3, which made for a better test of attention correction effects.

Procedure: The procedure and instructions were the same as in Experiment 1, with one difference: participants were told that their friend would sometimes be looking at the wrong object. However, it was stressed that the target object was always the one the participant/speaker was pointing at, and that was the object they needed to request. The instructions therefore treated the listener’s focus of attention as irrelevant to the speaker’s request.

The task was again very short (18 trials / approx. 5 min.), including only one trial of each type (Object/Listener Position $\times$ Listener Looking) and trials being randomized individually in order to avoid response strategies.

Results

We performed two types of analyses (for data visualization, see Fig. 5). Perspective Sensitivity analyses investigated the effect of Perspective (Aligned vs Misaligned) and Class (Middle Schoolers, High Schoolers and Adults) on the use of the most frequent response in joint attention (proximal ‘este’ in Position 1 and medial ‘ese’ in Positions 2 and 3).

Attention Direction analyses tested for the effect of Lis-

tener Looking (At Target, Closer and Further) and Age Group (Teens vs Adults) on the use of the medial ‘ese’ to push the listener’s attention in the Closer condition and the use of the proximal ‘este’ to pull the listener’s attention in the Further condition, each relative to the At Target baseline, in Object Position 1. In Object Position 2, we tested for the use of the distal ‘aquel’ to push the listener’s attention in the Closer condition and the use of the proximal ‘este’ to pull the listener’s attention in the Further condition, each relative to the At Target baseline. In Object Position 3, we tested for the use of the distal ‘aquel’ to push the listener’s attention in the Closer condition relative to the At Target baseline. There is no Further condition in Object Position 3 since the target was the last object on the table.

A - Position 1 / Perspective Sensitivity: We ran a logistic regression model with choice of the proximal demonstrative as the dependant measure (‘este’ = 1; ‘ese’ / ‘aquel’ = 0). The model included random intercepts by Participants and Items, as well as a random slope for Perspective by Participants and Class by Items. Perspective was sum-contrast coded and Class was treatment-contrast coded with Adult coded as the baseline. The model output did not reveal any significant results.

B - Position 1 / Pushing Attention: We ran a logistic regression model with choice of the medial demonstrative as the dependant measure (‘ese’ = 1; ‘este’ / ‘aquel’ = 0). The model included random intercepts by Participants and Items, as well as a random slope for Listener Looking by Participants and Age Group by Items. Age Group was sum-contrast coded and Listener Looking was treatment-contrast coded with the condition At Target coded as the baseline. The model output revealed a significant difference between the Closer and At Target conditions ($\beta = -9.943$, $z\text{-value} = -8.813$, $p < 0.0001$).

C - Position 1 / Pulling Attention: We ran the same logistic regression model as in B with choice of the proximal demonstrative as the dependant measure (‘este’ = 1; ‘ese’ / ‘aquel’ = 0). The model output revealed a significant difference between the Further and At Target conditions ($\beta = 3.463$, $z\text{-value} = 2.302$, $p < 0.0214$), as well as a significant interaction with Age Group ($\beta = 2.194$, $z\text{-value} = 2.116$, $p < 0.0344$).

D - Position 2 / Perspective Sensitivity: We ran the same logistic regression model as in A with choice of the medial demonstrative as the dependant measure (‘ese’ = 1; ‘este’ / ‘aquel’ = 0). The model output revealed a main effect of Perspective ($\beta = 2.205$, $z\text{-value} = 5.102$, $p < 0.0001$) and a significant difference between Adults and High Schoolers ($\beta = 0.854$, $z\text{-value} = 2.211$, $p < 0.0271$).

E - Position 2 / Pushing Attention: We ran the same logistic regression model as in B and C with choice of the distal demonstrative as the dependant measure (‘aquel’ = 1; ‘este’ / ‘ese’ = 0). The model output revealed a significant difference between the Closer and At Target conditions ($\beta = 3.295$, $z\text{-value} = 6.331$, $p < 0.0001$).

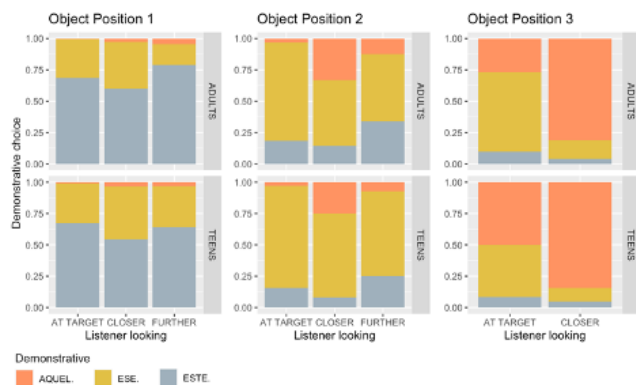


Figure 5: Mean demonstrative choice in Experiment 2.

F - Position 2 / Pulling Attention: We ran the same logistic regression model as in B, C and E with choice of the proximal demonstrative as the dependant measure ('este' = 1; 'ese' / 'aquel' = 0). The model output revealed a significant difference between the Further and At Target conditions ($\beta = -10.981$, $z\text{-value} = -7.777$, $p < 0.0001$).

G - Position 3 / Perspective Sensitivity: We ran the same logistic regression model as in A and D with choice of the medial demonstrative as the dependant measure ('ese' = 1; 'este' / 'aquel' = 0). The model output revealed a main effect of Perspective ($\beta = 5.486$, $z\text{-value} = 6.544$, $p < 0.0001$), a significant difference between Adults and Middle Schoolers ($\beta = -1.926$, $z\text{-value} = -3.713$, $p < 0.0003$), plus a significant interaction between Perspective and Middle Schoolers ($\beta = -1.966$, $z\text{-value} = -2.180$, $p < 0.0293$).

H - Position 3 / Pushing Attention: We ran the same logistic regression model as in B, C, E and F with choice of the distal demonstrative as the dependant measure ('aquel' = 1; 'este' / 'ese' = 0). Listener Looking and Age Group were both sum-contrast coded. The model output revealed a significant difference between the Closer and At Target conditions ($\beta = -4.416$, $z\text{-value} = -8.195$, $p < 0.0001$) and a significant effect of Age Group ($\beta = -1.395$, $z\text{-value} = -3.256$, $p < 0.0012$), plus a significant Listener Looking $\times$ Age Group interaction ($\beta = -1.970$, $z\text{-value} = -3.228$, $p < 0.0013$).

Discussion

Demonstratives are acquired early, together with the use of pointing gestures (Clark, 1978; Diessel and Monakhov, 2023; Rodrigo et al., 2004), but their development is protracted (Guijarro-Fuentes et al., 2022; Küntay and Özyürek, 2006; Shin and Morford, 2020), with 11-year-old children not yet revealing adultlike patterns of demonstrative use (González-Peña et al., 2022).

Here we compared the use of Spanish demonstratives by teens (ages 12-17) and adults. In Experiment 1, we predicted potential differences in teenagers' and adults' use of the medial 'ese' and the distal 'aquel', since these demonstratives rely on both Object Position and Listener Position parameters. The results confirmed these predictions: no Listener Position by Age Group interactions were observed in near space (Object Positions 0 and 1), where participants used mostly the proximal and medial forms. However, the Listener Position by Age Group interaction reached significance in far space: in Object Position 2, adults used the medial 'ese' more than teenagers when the listener was close to the target object (i.e. in Listener Positions 2 and 3), while teenagers used the distal 'aquel' more frequently than adults in those trials.

These patterns of demonstrative use suggest that for adults, the Listener Position parameter carries more weight than the Object Position parameter in far space relative to teenagers. In other words, when the target object is far from the speaker, adults are more sensitive to the listener's position than teenagers are, using the medial form 'ese' more fre-

quently than the younger group (who uses the distal form 'aquel') when the listener is close to the target.

In Experiment 2, we investigated teens' sensitivity to the Listener Attention parameter relative to adults. Both age groups showed significant attention correction, using the medial and distal forms more often for pushing the listener's attention when she was looking closer than the target object (gloss: *Look over there!*), and the proximal form for pulling the listener's attention when she was looking further from the target (gloss: *Look over here!*). Both correction effects were relative to when the listener was looking at the target.

However, confirming previous findings that demonstrative use has a protracted development, the teenagers in our study did not use the proximal demonstrative to pull the listener's attention when the target was in Position 1 as often as the adults did. Likewise, the degree of attention correction performed by the teenagers when the target was in Position 3 was weaker than the adults'. However, this interaction resulted from teenagers' preference for the distal demonstrative in the joint attention baseline relative to the adults, since the use of the distal form to push the listener's attention when she was looking closer was comparable in the two age groups. The latter pattern of results therefore replicates the findings from Experiment 1, with teenagers showing that, in far space, their Listener Position parameter carries less weight than the Object Position parameter relative to adults. Overall, both teens and adults showed more perspective sensitivity in far space (Positions 2 and 3) than in near space (Position 1).

In summary, teenagers' use of Spanish demonstratives revealed sensitivity to the three parameters investigated in our study; namely, Object Position (relative to the speaker), Listener Position (relative to the object) and Listener Attention (also relative to the object). Teenager demonstrative use was therefore comparable to adults in most experimental conditions, which confirms the strong pragmatic skills of the younger group. However, as predicted by Rubio-Fernandez (2024), the relative weight of the different parameters did not seem to be identical across the two age groups, resulting in differences in the use of the medial demonstrative 'ese' and the distal demonstrative 'aquel' in situations of joint attention in far space, as well as in the use of the proximal demonstrative 'este' to pull the listener's attention in near space.

Our results suggest that the social parameters affecting demonstrative use in Spanish (i.e. Listener Position and Listener Attention) are still being adjusted in adolescence relative to mature adult use. Future studies should try to replicate these findings using dual eye-tracking in more naturalistic referential-communication settings (for relevant studies with infant-mother dyads, see Smith et al., 2018). We conclude that the protracted development of demonstrative use supports the view that the acquisition and regular use of demonstratives trains perspective taking across languages (Rubio-Fernandez, 2021, 2023), highlighting the importance of referential communication studies for our understanding of the interdependence between language and social cognition.

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