

Analogical Levelling in the Majorcan Catalan Demonstrative System

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Abstract

Demonstratives are cross-linguistically widespread expressions. The use of demonstratives is flexible due to their semantic elasticity, which allows them to describe more or less extensive regions or referents in a communicative scenario. The constant remapping between demonstratives and referents might lead to a restructuring of the deictic system itself in accordance with the parameters affecting its use. To that end, we analyzed the structural changes affecting demonstratives in Majorcan Catalan by analysing whether speakers use three or two terms (*aquest/aqueix/aquell* vs. *aquest/aquell*) to convey spatial information. We also assessed whether any change in the adnominal/pronominal forms mirrored locative adverbs reduction. We elicited the production of demonstratives in 36 simultaneous Majorcan/Spanish bilinguals via a psycholinguistic experiment and we found two main results. First, simultaneous bilingual speakers do not extensively use the term *aqueix* to convey information related to physical distance. Second, the pronominal/adnominal reduction from three- to two-terms differs from the adverbial reduction. In the first case, *aqueix* is dropping out of the system, while locative adverbs present a shift with substitution of *aquí* for *aquí*. Overall, our results shed new light on how the Majorcan Catalan demonstrative system is structured and explain structural changes in terms of ‘analogical levelling’ in paradigmatic relations.

Keywords:

Spatial demonstratives; Majorcan Catalan; analogical levelling; paradigmatic relations in immediate models

1. Introduction

Deixis is a universal phenomenon (Diessel, 1999; Lenz, 2003). It evokes and coordinates cognitive representations of space, time, person and discourse in endophoric and exophoric contexts (Diessel, 2012; Fricke, 2014; Lenz, 2003). In spatial deixis, the focus of our study, deictic expressions specify the figure-ground relations in a visual field and the positions of objects/hearer during speech acts, manipulating the focus of attention of co-participants (Diessel, 2006; Fricke, 2014; Kita, 2003; Jungbluth & Da Milano, 2015; Stukenbrock, 2015). Deictic expressions connect an *origo*, that is the centre projecting the reference, to a referent (i.e., ‘*That red book on the central table of the library*’; Bühler, 1934; Fricke, 2014). The degree of amplitude of the *origo* is pragmatically modulated by either the discourse context or the referential scenario

(Coventry, Valdés, Castillo & Guijarro-Fuentes, 2008). In accordance with Pérez-Saldanya (2015), we can define deictic expressions as ‘opaque’ because of the imprecise mapping between word and referent, since the mere utterance does not ensure the referent is identified; additional information such as pointing and eye-gaze trajectory is usually employed to resolve ambiguity (Kita, 2003). Moreover, deictic expressions can also be regarded as semantically elastic as they can be used to describe more or less extensive regions. Following the examples for locative adverbs provided by Pérez-Saldanya (2015) for Spanish, the adverb *aquí* (here) can denote the speaker’s space compared to that of the addressee (*‘Aquí donde estoy sentado’*, Here, where I am sitting), but also a wider place including them both (*‘Aquí, donde estamos, hace mucho calor’*, Here, where we are, it’s very hot’; 2015: 129). The constant remapping between deictic expressions and referents might lead to a restructuring of the deictic system itself in accordance with the parameter affecting its use (Meira, 2003), which has been, to our knowledge, understudied.

In the present paper we examine deictic expressions in the system of demonstratives of Catalan spoken in Mallorca. In accordance with Meira (2003), we posit that deictic expressions can undergo structural changes and we aim to explain such changes in terms of ‘analogical levelling’ (Fertig, 2013, Hock, 2003; Strik, 2015; Millar, 2015) in paradigmatic relations (Pérez-Saldanya, 2015). Analogical levelling is a cognitive strategy involving the processes of maintaining and modifying the internal structure of a language and of spreading a dominant linguistic pattern, under the influence of another form (Hickey, 2001). To that end, we ran a psycholinguistic study adopting the methodology developed by Coventry et al. (2008) to elicit the production of demonstratives to convey physical distance and assess how this information is distributed across demonstratives. More specifically, the experiment aimed to find out (a) whether Majorcan Catalan operates as a three-term or a two-term demonstrative system, (b) whether or not the potential structural reduction from a three- to a two-term adnominal/pronominal demonstrative system resembles the binary adverbial opposition, and (c) if the reduction is the case, whether there is interchangeability between the first and second demonstrative forms.

The remainder of the paper is structured as follows. First, we consider adnominal and pronominal

demonstrative forms and the different parameters affecting their choice and usage (section 1.1). Then, we analyse the specific case of Majorcan Catalan system of demonstratives (section 1.2) and present the main lines of research of the analogical levelling approach, the framework for our analysis (section 1.3). We provide explanation of the psycholinguistic task used to elicit the production of demonstratives in our study (section 2) and explain the resulting structural change (section 3), from a three-term to a two-term system, in the framework of analogical levelling and paradigmatic relations (section 4) (the latter in line with the study conducted by Pérez-Saldanya (2015) on Catalan and Spanish locative adverbs).

1.1. *Demonstratives and parameters*

The most grammaticalized and cross-linguistically wide-spread deictic expressions are demonstratives, comprising adnominal, pronominal (*this/that*), and adverbial forms (*here/there*). Their usage and choice are affected by a range of factors, including perspective-taking (Coventry et al., 2008; Küntay & Özyürek, 2006), interaction between speaker and hearer (Peeters, Hagoort & Özyürek, 2015), semantic features (Rocca, Tylén & Wallentin, 2019), ownership, visibility, familiarity of the referent (Coventry, Griffiths & Hamilton, 2014) and distance/reachability (Caldano & Coventry, 2019; Coventry et al., 2008; Coventry et al., 2014; Diessel, 1999; Diessel, 2005). However, primary among these factors is (interactive) distance. In a series of empirical studies, Coventry and colleagues (2008, 2014, 2019) presented objects on a table at different degrees of proximity in front of a speaker. On each experimental trial, participants had to point at the object, using a combination of demonstrative, colour and noun to describe the location of the object in front of them (e.g., *this/that red star; esta/esa/aquella estrella roja*). All of these studies found that the proximal term (*this/este*) was used most within participants' reach, with a graded fall off in the use of the proximal term as the object moved out of reach. Moreover, increasing participants' reach by getting them to point with a stick increased the scope of the proximal term, showing that the distinction between reachable (interactive) and not reachable distance is key to demonstrative choice (not mere metric distance). Such a distinction maps onto separate brain systems for the processing of objects reachable around the body (peri-

personal space) versus processing objects outside reachable space (extra-personal space) (see, for instance, Di Pellegrino & Làdavas, 2015; Hunley & Lourenco, 2018 for reviews).

The majority of languages of the world have a two-term demonstrative system, with the terms usually considered to correspond with a proximal-distal contrast (Diessel, 1999, 2005). However, around one quarter of those languages have three terms that are often considered either to have a medial (middle-distance or degree of proximity) term (Diessel, 2005), and/or can be considered to be person-centred, projecting the deictic centre from someone other than the speaker (as a function of speaker-hearer positions). When the deictic center coincides with the speaker himself, the system of demonstratives is distance-oriented, but the deictic center can also shift. In the three-term demonstrative system of Japanese *kono* (this)/*sono* (this/that)/*ano* (that), for example, the term *sono* can refer to the space reachable by the hearer (but not the speaker) when the hearer is facing the speaker (Gudde & Coventry, 2017). In Spanish, Jungbluth (2003, 2005) has argued that the three-term demonstratives system *este* (this)/*ese* (this/that)/ *aquel* (that) is distance-based when speaker and hearer are aligned, with *este* referring to objects near the speaker, *ese* operating as a middle-distance term, and *aquel* referring to objects far away from both speaker and hearer. However, the use of the three terms switches as a function of relative positions of speaker and hearer. When speaker and hearer are facing each other, *este* applies for any location within shared space, with *aquel* used for any locations outside the shared space. Finally, *ese* can also be used, like *sono* in Japanese, to refer to an object located in the near space of the hearer. While there is certainly evidence for the importance of the relative positions of speaker and hearer on demonstrative use in Spanish (Coventry et al., 2008; Jungbluth, 2003, 2005), results are by no means completely consistent across studies, suggesting changes in use across contexts. These inconsistencies may in turn lead to a shifting of the mapping between demonstratives terms and referents and makes demonstratives semantically elastic but also opaque. Moreover, a consistent shifting of the mapping between demonstrative form and referent might result into a change in the internal structure of the deictic expressions, such as from a three- to a two-term demonstratives system (Meira, 2003). Majorcan Catalan, the focus of our study, represents an example of this remapping.

1.2. Demonstratives in Majorcan Catalan

Catalan is a Western Romance language spoken in several areas, such as Catalonia, Valencia, Andorra, the Balearic Islands, Carche, Roussillon (France) and Alghero (Sardinia).¹ In line with the schematization of deictic expressions presented by Nogué-Serrano (2015), Catalan is characterized by a proximal/distal opposition conveyed by a prevalent two-term system of demonstratives *aquest* (this)/*aquell* (that) (Colomina i Castanyer, 2002; Nogué-Serrano, 2015). This binary proximal/distal opposition derives from a three-term system consisting of *aquest* (originally designating the 1st person or speaker) for the proximal degree of proximity, *aqueix* (originally designating the 2nd person or hearer) for the medial degree of proximity and *aquell* (originally designating the 3rd person) for the distal degree of proximity (Casanova, 1993). The adverbial forms showed the same proximal/medial/distal opposition conveyed by the terms *ací* (here), *aquí* (here), *allí/allà* (there), as shown in Table 1.

Table 1. Demonstratives in Catalan

Degree	Pronominal – adnominal forms				Adverbs	
	Masculine		Feminine		Neuter	
	Singular	Plural	Singular	Plural		
1 st	<i>Aquest</i> (<i>this</i>)	<i>Aquests</i>	<i>Aquesta</i>	<i>Aquestes</i>	<u><i>Açò</i></u>	<u><i>Ací</i></u> (<i>here</i>)
2 nd	<u><i>Aqueix</i></u> (<i>this</i>)	<u><i>Aqueixos</i></u>	<u><i>Aqueixa</i></u>	<u><i>Aqueixes</i></u>	<i>Això</i>	<i>Aquí</i> (<i>here</i>)
3 rd	<i>Aquell</i> (<i>that</i>)	<i>Aquells</i>	<i>Aquella</i>	<i>Aquelles</i>	<i>Allò</i>	<i>Allí</i> (<i>there</i>)

Note. Table 1 shows the system of demonstratives in Catalan presented in Brucart (2002: 1492). The underlined terms are disappearing from the common use. The neuter 1st form ‘*aço*’ and the adverbial 1st form are not extensively used, while the pronominal/adnominal 2nd term ‘*aqueix*’ is still used in Valencia, Ibiza, la Franja.

¹ We adopted the same territorial and linguistic schematization proposed by Nogué-Serrano (2015) for consistency in terminology. Detailed reviews of the Catalan variety spoken in Mallorca can be found in Alomar Perelló, Alomar i Canyelles, Bibiloni, Corbera & Melià (2007); Bibiloni (1991, 1997); Veny (1982/1998).

The second demonstrative terms, both adnominal/pronominal (*aqueix*)² and adverbial forms (*aquí*), merged into two first degree proximal distance forms (Casanova, 1993), with the reduction resulting in the use of the first term *aquest* and the second term *aqueix* as synonymic forms for the proximal degree of proximity, with a predominant use of *aquest* (Alomar & Melià, 1999; Morey, Melià & Corbera, 1995; Vann, 1995). The same reduction has occurred with locative adverbs, but in this case the second term *aquí* took over the first form *ací*.³ However, while the locative adverb system is assumed to have two forms (i.e., *aquí*, here/*allí*, there), there is some debate related to the pronominal and adnominal forms. Some varieties of Catalan are more conservative than others, sometimes resulting in the co-presence of two- and three-term systems of demonstratives (Institut d'Estudis Catalans, 2016; Saragossà, 2004). According to Brucart (2002), the vast majority of the Eastern Catalan speaking areas (e.g., Central and Northern Catalan) have a two-term system of demonstratives, whereas the South-western areas (e.g., Valencian) and the specific variety spoken in La Franja and in the Balearic Catalan employ a three-term system (i.e. Valencia: *este/eixe/aquell*; Mallorca, and Ibiza: *aquest/aqueix/aquell*, where *eixe* and *aqueix* refer to the medial degree of proximity, see Table 2 for Majorcan Catalan).

² Because of space limitation, the present paper will only focus on masculine/feminine forms of the adnominal/pronominal forms of the demonstratives system of Catalan. The neuter form *acò* will be studied in a future research.

³ «Així, quan es dona la tendència a fixar formes úniques per a marcar la deixi i l'anàfora i els anafòrics prenen valors deíctics, *aquí* restava inutilitzat per a convertir-se en el deíctic de segon grau, ja que a més d'aquest valor el seu sinònim deíctic majoritari era *ací*, que funcionava dins de la primera, i a més, una gran part de les frases en què s'utilitzava anafòricament eren semblants a d'altres deíctiques amb *ací*, cosa que ja d'abans havia fet que *aquí* s'utilitzara deícticament com a primera. La llengua tendia a triar una forma per cada funció, i *aquí* en feia dues. *Aqueix*, en les mateixes condicions que *aquí*, sense el reforçament d'aquest adverbi, es decantà també cap a la primera, tot mantenint els seus valors identificadors» (see Casanova 1993: 173). 'Thus, when unique forms to mark deixis and anaphora set and the anaphoric forms took deictical values, *aquí* [here] was not used to be converted in the second-degree form, because apart from this value, its major synonymic form was *ací*, which worked as first-degree deictic form. In addition, a large part of the phrases in which it was used anaphorically were similar to other deictics with *ací*, something that had already determined that *aquí* would be used deictically as the first. The language tended to choose a form for each function, and *aquí* presented two. *Aqueix*, under the same conditions as *aquí*, without the strengthening of this adverb, also opted for the first, while maintaining its identifying values'.

Table 2. Demonstratives in Majorcan Catalan

Degree	Pronominal – adnominal forms				Adverbs	
	Masculine		Feminine		Neuter	
	Singular	Plural	Singular	Plural		
Proximal	Aquest (<i>this</i>)	Aquests	Aquesta	Aquestes	Això	Aquí (<i>here</i>)
Medial	Aqueix (<i>this</i>)	Aqueixos	Aqueixa	Aqueixes	-	-
Distal	Aquell (<i>that</i>)	Aquells	Aquella	Aquelles	Allò	Allí (<i>there</i>)

Note. Table 2 shows the system of demonstratives in Majorcan Catalan presented in the present article. We have chosen not to merge the 1st demonstrative form *aquest* and the 2nd form *aqueix*, as suggested by Alomar & Melià (1999); Casanova (1993) and Morey et al. (1995). In line with our results, we have labelled the forms differently in accordance with the information conveyed when dealing with physical distance, that is proximal, medial and distal.

The three-term vs. two-term system schematization shows variation in the use and in the inner characterization of a standardized system of demonstratives, degrees of proximity conveyed and *origos* in Catalan varieties (Fisiak, 1980; Meira, 2003). More specifically, as far as synchronic morphological changes are concerned, when a three-term demonstrative system is reduced to two terms, the second and third terms generally merge, as well as the degree of proximity conveyed. This trend of reduction starts with the rearrangement of the tripartite system of Latin *hic-iste-ille*, and the loss of *hic* and its ternary articulation (Lüdtke, 2015; Ramat, 2015). The reduction to a binary opposition seems to support a fundamental near/far opposition, where *near* includes the first person and degree of proximity and *far* includes the second and third person and degrees of proximity. In Italian, for example, the second form, *codesto* (this/that), of the three-term system disappeared leaving a two-term system where *questo* (this) refers to the first person and degree of proximity and *quello* (that) refers to second and third degrees of proximity (Badia i Margarit, 1981). Romanian also uses a binary distinction with fairly fuzzy boundaries (Stavinschi, 2015: 18). The

near/far contrast is represented by the proximal term *acest-a* (this) and the distal term *acel-a* (that) for adnominal and pronominal forms, as well as *aici* (here) and *acolo* (that) for the proximal and distal adverbs. Argentinian Spanish also shows the same trend of reduction, where the first term *este* (this) refers to the first person and degree of proximity, and *ese* (that) or *aquel* (that) refer to second and third degrees of proximity. The coexistence of the two forms, *ese* and *aquel*, is possible given that *aquel* is more formal and more contrastive than *ese*, but certainly not more distant (Pérez-Saldanya, 2015: 116). Moreover, while European Portuguese maintains the Latin three-term structure of demonstratives *este* (this) / *esse* (this-that) / *aquele* (that), spoken Brazilian Portuguese presents a reduction from three to two terms with the loss of the first proximal term *este* (Meira, 2003; Jungbluth & Vallentin, 2015). The two forms of adverbs *aquí* (here) / *aí* (there) are generally combined with demonstrative, such as *esse aquí* (this here) and *esse aí* (this there) to convey emphasis and avoid ambiguity when referring to speaker and hearer perspective, respectively. The combinations of demonstratives and adverbs of spoken Brazilian Portuguese are similar to the combined forms conventionalized in contemporary French, with its two-terms system, both for adverbs *ici* (here) / *là* (there) and adnominal and pronominal demonstrative forms *ceci* (this) / *celui* (that) and combined forms *celui-ci* (this here) and *celui-là* (this there) (Jungbluth & Vallentin, 2015). Nevertheless, the aforementioned trend of reduction does not seem to apply to Majorcan Catalan, where both first and second adnominal/pronominal forms, *aquest* (this) and *aqueix* (this/that), convey proximity (cf. Alcover-Moll, 1962; Moll 1952: 281, Moll 1968: 150) and, for this reason, are presented as synonymous (Alomar & Melià, 1999; Casanova, 1993; Morey et al., 1995). The reason of this internally driven reduction (namely analogical levelling and paradigmatic relations, see section 1.3) has been, to our knowledge, understudied (cf. Casanova, 1993; Diessel, 1999; Jungbluth & Da Milano, 2015; Pérez-Saldanya, 2015). The present paper seeks to fill up this gap adopting a methodology, a psycholinguistic elicitation task, not usually employed in traditional linguistic description (see section 2).

1.3. Analogical levelling in paradigmatic relations

Different perspectives have been proposed to account for the process of reduction, such as morpho-syntactic change (Diessel, 1999), universal asymmetries and economical coding (Haspelmath, 2008), basic language change (Hickey, 2001), language contact and simplification (Thomason, 2008), analogical levelling (Croft, 1990; Fertig, 2013, Hock, 2003; Strik, 2015; Millar, 2015), marked vs. unmarked forms and paradigmatic relations (Albright, 2005, 2006; Greenberg, 1996/2005; Pérez-Saldanya, 2004, 2015; Pons Moll, 2009; Wetzels, 1981). In the present paper we will specifically adopt and investigate the relationship between analogical levelling and paradigmatic relations. *Analogy* is a common strategy that helps to explore and discover connections between different cognitive domains; while *levelling* is the process which regulates the structural changes - reduction or removal of forms - in the same paradigm (Hock, 2003; Fertig, 2013; Strik, 2015). In the case of demonstratives, the reduction from a three- to a two-term system might be connected to what Fertig (2013) defines as ‘analogical innovation and change’.⁴ More specifically, analogical change deals with a difference over time in prevailing usage which corresponds to an analogical innovation or a set of related innovations within a significant portion of a speech community (Fertig 2013: 12). Analogical change seems to be unpredictable, but it is actually far from being a chaotic process (Millar, 2015). In this respect, Kuryłowicz (1947) proposed a series of combinable laws that define specific analogical processes (see Millar (2015) for a detailed review on the six laws). However, for the purposes of the present paper we consider the 4th and 5th laws as they are most relevant for demonstrative system structural change and semantic reorganization. According to the 4th and the 5th laws, when a form undergoes an analogical reshaping process, the new form takes over the old form (i.e., 4th law; for instance: the English plural forms of *brethren* substituted by *brothers*), eliminating a marginal meaning in favour of more central (and salient) ones (i.e., 5th law; for instance, the loss of distinction between nominative and accusative forms from Latin to Old French). In addition, there are different types of analogical change, such as non-immediate

⁴ We acknowledge that bilingualism may also contribute to language innovation and change, specifically in contexts such as la Balearic Islands, characterized by a wide-spread simultaneous Spanish/Catalan bilingualism (Thomason, 2008; among others).

and immediate analogical models. Both models basically refer to whether the ‘relation of similarity’ behind the analogical change is found in the same speech context or not. In non-immediate models, the forms that undergo the analogical change would not occur adjacent to one another in the speech context (i.e., Latin *labos* > *labor* and *honos* > *honor* for the analogy with other forms in the paradigm, such as *honorem*, *honoris* (Albright, 2005, 2006; Bybee, 1994; Campbell, 2013; Wetzels, 1981). In immediate models, the forms that undergo the analogical change would occur in adjacent positions or juxtaposed to one another in frequently repeated pieces of speech (i.e., sequences of basic numbers, days of the week, months of the year, words like male and female). Specific expressions like demonstratives forms and locative adverbs frequently occur in juxtaposed position and in repeated pieces of speech. For this reason, we can assume they belong to the immediate model of analogical levelling and change.

Despite the extensive research with regard to similarity and paradigmatic relations, little is known regarding how this paradigm can be applied to demonstratives. Pérez-Saldanya (2015) ran a diachronic corpus study on the reduction of locative adverbs in Catalan and Spanish. As shown in Table 1 above, the old Catalan system of deictic expressions also presented a three-term organization of the locative adverbs *ací* (here), *aquí* (here), *allí* (there). The locative adverb for second-degree proximity *aquí* (here) took over the first-degree adverb *ací* (here), which has now disappeared from the system (Casanova (1993) and footnote 4 herein). Beginning with the unstable nature of deictic expressions, Pérez-Saldanya studied the tendency towards a bidirectional restructuring (Pérez-Saldanya 2015: 131); that is, from three-term to two-term systems and from two-term to three-term systems. Moreover, he proposes that Catalan locative adverbs have been affected by a reduction from three to two terms, because of three main factors. The first factor depends on the fact that locatives focus more on distance than on the potential space between speaker and hearer. The second factor depends on the disuse of certain formal variants and, the third factor on the possibility of conveying additional locative information by other forms. The first locative adverb *ací* (here), by losing strength, makes the second-degree adverb *aquí* (here) gradually take over the value of proximity to both the speaker and hearer and supplies the need of additional information by the use of the clitic form *hi*. This trend

of reduction, based on paradigmatic relation and on the opaque nature⁵ of spatial deictic expressions, would explain the assimilation of the medial terms (*aquí*, here) to the proximal one (*ací*, here). Still, Pérez-Saldanya's study does not provide additional clues about whether there is any relation between the adverbial reduction and the adnominal/pronominal reduction in Catalan. Adopting a psycholinguistic methodology, the present study aims to provide answers to this observed trend in the usage of demonstratives in the variety of Majorcan Catalan.

To sum up, the present work seeks to address three main goals. The first is to find out whether Majorcan Catalan is a three-term or a two-term demonstrative system (cf. Colomina i Castanyer, 2002; Nogué-Serrano, 2015); the second is to determine whether or not the locative adverb reduction (Pérez-Saldanya, 2015) can also apply to demonstrative adnominal and pronominal forms in use, in the specific case of Majorcan Catalan (cf. Alomar & Melià, 1999; Morey et al., 1995); and the third is to show whether or not the first and second demonstrative forms are interchangeable. We elicited the production of demonstratives using a psycholinguistic methodology developed by Coventry et al. (2008), manipulating both the distance between a speaker and a given object and also the position of a hearer, located either beside the speaker or opposite the speaker. According to Alomar & Melià (1999) and Morey et al. (1995), we should find a bipartition of the space together with an interchangeable use of the first term *aquest* (this) and the second term *aqueix* (this/that) for proximal positions, with comparable frequency of use, as well as an exclusive use of *aquell* (that) for distal positions. However, the alternative hypothesis is that the three-term system has changed to a two-term system, with a consequent dominance of a single term for proximal locations. To preview the results, low frequencies of occurrence of the second term *aqueix* support the view that the second term is actually disappearing and that this disappearance is leading to a formal two-term system conveying distance information. In accordance with Fertig (2013) and Hock (2003), we claim that the reason of the disappearance and reduction from three- to two-term system of demonstratives in Majorcan Catalan adverbs

⁵ Here again, the use of the term "opaque" refers to Pérez-Saldanya (2015). Demonstratives are opaque because their mere utterance does not ensure that the referent can be identified (2015:128).

might be connected to the need of equilibrium, of levelling, of the paradigmatic relations in immediate models. We also hypothesize that the reduction from three- to two-term opposition reflects a simply primary reachable/non-reachable distinction, and that language change may move in the direction of more basic perceptual distinctions (Di Pellegrino & Làdavas, 2015; Hunley & Lourenco, 2018). This would also explain why a binary system is more dominant across the world's languages (Diessel, 2005; see section 4).

2. Methodology

To elicit the production of demonstratives in Majorcan Catalan, we adapted the psycholinguistic methodology developed by Coventry et al. (2008; see also Coventry, et al., 2014; Gudde, et al., 2018). In 'the memory game' method, objects are placed at varying distances on a table in front of a participant, and the task for participants is to describe the location of each object with a view to facilitating memory for object location (probed throughout the task). As well as varying object location, the memory game also manipulates the position of a hearer, either positioned beside the participant, or opposite the participant at the far end of the table. Therefore, the method is able to unpack the influence of both object distance and relative positions of speaker and hearer on choice of demonstrative forms across languages (see section 2.3. for more details). Coventry et al. (2008) found that the choice of both Spanish and English demonstratives mapped onto a distinction between reachable and non-reachable space, and that the choice of Spanish demonstratives (but not English demonstratives) was affected by hearer position.

We conducted all research procedures according to the University of the Balearic Islands institutional guidelines for the protection of human participants, as set out in Legislative Decree N°196/1998. All participants gave written consent before taking part in the experiment.

2.1. *Participants*

Thirty-six simultaneous bilingual students from the University of the Balearic Islands participated in the experiment for course credit. The experiment was advertised and promoted during classes. All participants ($M_{age} = 22.86$, $SD = 3.23$; female = 25) were born and were resident in Mallorca, one of the four islands of the Balearic archipelago, with Catalan-Spanish bilingual speakers. Participants were all simultaneous bilinguals, reporting first contact with Majorcan Catalan and Spanish within 12 months of birth. Different levels of linguistic preference as reported in the Bilingual Language Profile questionnaire (see Appendix for details on the questionnaire scores, Bilingual Language Profile, Birdsong, Gertken & Amengual 2012; Klein, Mok, Chen & Watkins, 2014; Kroll, Bobb & Hoshino, 2014; Werker & Byers-Heinlein, 2008).⁶

2.2. *Materials*

We elicited the verbal and gestural production of demonstratives across a range of spatial situations (see Figures 2 and 3). Six circular plastic disks (6cm diameter), with different coloured shapes (see Figure 1), were placed on twelve coloured dots equally distributed on a conference table (320 * 80cm) at varying distances from participants/speakers, as shown in Figure 2, 3a/b. These dots covered locations in three subareas; one in peri-personal space (within the participants' arm reach), one in extra-personal space in the middle of the table (not reachable from either end of the table), and one in extra-personal space at the far end of the table. In addition, to check whether the use of demonstratives was affected by the position of the hearer (i.e., experimenter), the experimenter sat either beside or opposite (facing) the participant, and therefore objects located in the subarea at the far end of the table would be reachable by the experimenter (but not the speaker).

⁶ We classified the reported age as early simultaneous when equal or inferior to 2 years old, as late simultaneous when superior to 2 and inferior to 6 years old and as sequential when superior to 6 years old.



Figure 1. Discs with the sketched shapes. From left to right, the stimuli used were a green star, a black cross, a red moon, a yellow triangle, an orange square and a blue heart.

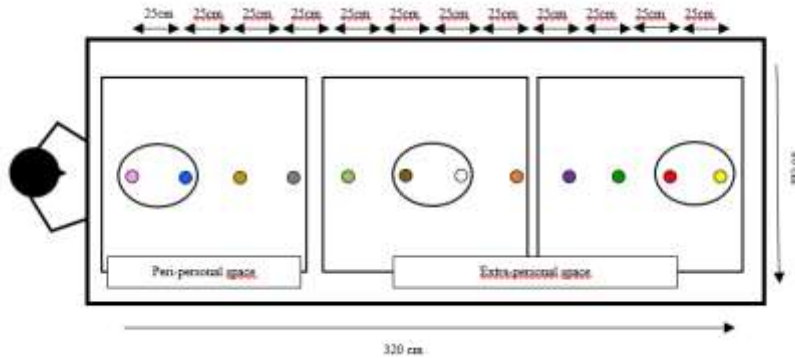


Figure 2. Setting of the experiment. From left to right, we used the six circled positions: pink (1st position at 25cm), blue (2nd position at 50cm), brown (3rd position at 150cm), white (4th position at 175cm), red (5th position at 275cm) and yellow (6th position at 300cm). We divided the total space in three subareas: one peri-personal space, within arm's reach, and two extra-personal spaces, out of the participant's arm's reach.

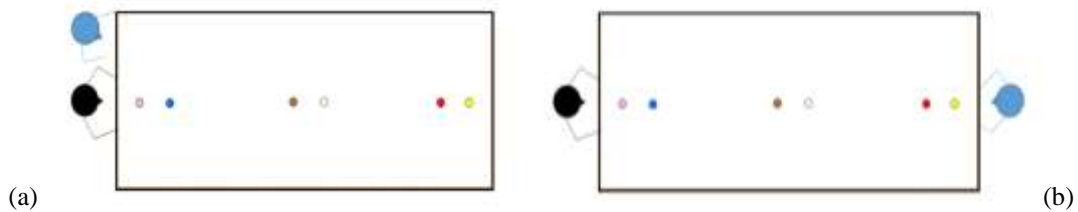


Figure 3(a, b). Setting of the experiment in relation to the position of the experimenter. In (a) the experimenter sat beside the participant (on the left), whereas in (b) the experimenter sat opposite the participant.

2.3. Procedure

Both the participant and the experimenter sat at the conference table to take part in the memory game elicitation task. Participants were asked to memorize the position of the six disks on the twelve colourful dots located on the table and to answer memory questions randomly asked by the experimenter. By doing so, they were unaware that we were interested in the language they used to refer to the position of the disks on the table. To elicit the production of demonstratives, participants were asked to describe the location of an

object after it had been placed by the experimenter, pointing and using a three-element verbal production consisting of a demonstrative (*aquest/aqueix/aquell*), and the colour and the shape of the object on the disk (i.e., this/that red moon).⁷ Participants were free to use one of the three forms of demonstratives provided, allowing us to test how frequently each term was used, and how the demonstrative system in Majorcan Catalan operates. Each participant completed thirty-six trials divided in two sub-sessions of eighteen trials each. The main difference in the two sub-sessions was the position of the experimenter: beside or opposite to the participant. The order of the position of the experimenter, presentation of the stimuli and the locations of the discs on the dots were counterbalanced to avoid any effect of order of presentation.

3. Results

Table 3 shows the overall frequency of use of each demonstrative for each of the subareas on the table for each of the seating configurations. The data for the two different seating configurations were almost identical, showing that the position of a hearer does not affect the choice of demonstratives in Majorcan Catalan. For that reason, in inferential analyses we collapsed across seating positions, focusing on the use of the three demonstratives in each subarea.

⁷ The order of constituents in Catalan differs from English. While the latter presents a pre-nominal positional of the adjectives, Catalan present a, most common, post-nominal position of the adjectives. Thus, the example reported in the text, *This red moon*, in English, would be translated as **This moon red* Catalan, as in *Aquesta lluna vermella*.

Table 3. Frequency of use of each demonstrative for each subarea

Experimenter in BESIDE position									
	AQUEST			AQUEIX			AQUELL		
	Subarea 1	Subarea 2	Subarea 3	Subarea 1	Subarea 2	Subarea 3	Subarea 1	Subarea 2	Subarea 3
Total	211	74	32	5	42	6	0	100	178
Mean	5.86	2.06	0.89	0.14	1.17	0.17	0.00	2.78	4.94
SD	0.83	2.43	2.09	0.83	2.13	1.00	0.00	2.46	2.25

Experimenter in OPPOSITE position									
	AQUEST			AQUEIX			AQUELL		
	Subarea 1	Subarea 2	Subarea 3	Subarea 1	Subarea 2	Subarea 3	Subarea 1	Subarea 2	Subarea 3
Total	210	87	32	6	38	6	0	91	178
Mean	5.83	2.42	0.89	0.17	1.06	0.17	0.00	2.53	4.94
SD	1.00	2.51	2.11	1.00	2.15	1.00	0.00	2.61	2.27

Note. The table presents the total frequencies of use (summed across participants), and mean frequency and standard deviations for each demonstrative for each subarea on the table for each sitting position. We report the measures of each subarea as follows: Subarea 1 (25 and 50 cm) in the peri-personal space of the speaker, Subarea 2 (150 and 175 cm) and Subarea 3 (275 and 300 cm) in the extra-personal space of the speaker. The uppermost part of the table reports frequencies of use when the experimenter is seated beside the participant; the bottommost part of the table reports frequencies of use when the experimenter is sitting opposite the participant.

As can be seen in Figure 4, in the first subarea, with objects located in the peri-personal space (within the speaker’s arm reach), *aquest* was almost always chosen for description, with very few uses of *aqueix* and no uses of *aquell*. A non-parametric Friedman test (repeated measured) confirmed the finding that *aquest* was used significantly more than the other demonstratives (chi-square (N = 38, df = 2) = 67.50, $p < .00001$).

In the second subarea, extra-personal space (outside the speaker’s arm reach), but at a middle distance, there is more of an even distribution of demonstrative choice in this subarea, but nevertheless *aqueix* was used significantly less frequently than either *aquest* or *aquell* (chi-square (N = 38, df = 2) = 7.00, $p = .03$; both pairwise contrasts $<.05$), with no difference between the use of *aquest* and *aquell* ($p > .05$).

In the third subarea, extra-personal space (outside the speaker’s arm reach), and at a far distance, the frequency of use of demonstratives was significantly different overall (chi-square (N = 38, df = 2) = 40.865, $p < .00001$), with significantly more frequent use of *aquell* than either *aquest* or *aqueix* (both $p < .0001$). In addition, *aqueix* was used significantly less than *aquest* ($p = .02$).

These results reveal two key findings. First, the Catalan Majorcan demonstrative system appears to be distance based, as the position of a hearer did not impact upon demonstrative choice. Second, *aqueix* is used much less frequently overall than other terms, and when it is used it is used as a middle-distance term, but with a lower frequency than either *aquell* or *aquest* (see Figure 4).

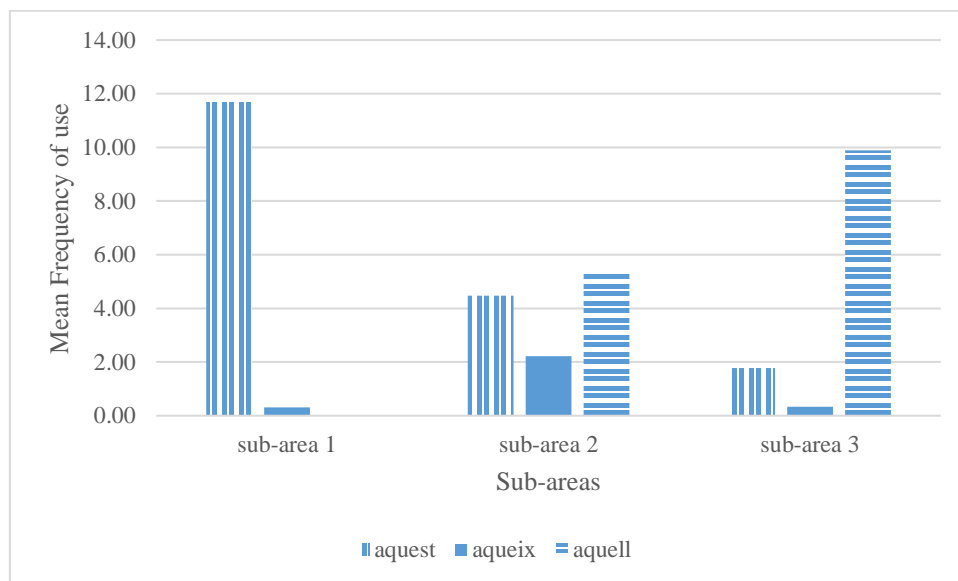


Figure 4. The figure shows the mean frequency of use of each of the demonstratives by subarea. The vertical blue striped/left bar represents the mean frequency of use of *aquest*; the middle plain blue bar represents the mean frequency of use of *aqueix* and the horizontal blue striped/right bar represents the mean frequency of use of *aquell*. Positions of experimenter are collapsed. (Note: *aquell* was never used in sub-area 1, hence the absence of a bar for that term in that subarea.)

4. Discussion

Demonstratives are universal (Diessel, 1999; 2005), but within and between languages they are also subject to structural change (Fertig, 2013), such as a reduction in the number of terms (Meira, 2003). In the present paper we analysed the performance of thirty-six simultaneous bilinguals of Majorcan Catalan and Spanish to address three main research questions. The first research question referred to the number of demonstrative terms actually in use in the Majorcan Catalan speaking community: whether there are three [*aquest* (this) /*aqueix* (this, that) /*aquell* (that)] or two [*aquest* (this) / *aquell* (that)] (cf. Alomar & Melià, 1999; Casanova, 1993; Morey et al., 1995). The second research question dealt with whether the (eventual) reduction of the system of demonstratives mirrors the correspondent locative adverbial forms reported by Pérez-Saldanya (2015). If a three-term system was the case, we also sought to identify whether the first term *aquest* and the second term *aqueix* are used as synonyms to convey proximal distance information.

The results of the psycholinguistic elicitation task produced several clear findings. First, the Majorcan Catalan system of demonstrative appears to be undergoing a reduction from three- to two-term system of demonstratives, as suggested by the low frequencies of occurrences of the second term *aqueix*. The second finding is that this two-term demonstrative opposition does not mirror the proximal/distance contrast conveyed by the adverbial locative forms *aquí* (here)/*allí* (there) (Casanova, 1993; Pérez- Saldanya, 2015) since the nature of the reduction affecting the two systems is not the same. In the case of locative adverbs, we have a reduction with substitution: since the first term *ací* had lost its use, the second anaphoric term *aquí* had taken over embedding the proximal connotation and losing the medial/hearer's situational use. In the case of adnominal/pronominal demonstratives, the second term *aqueix* seems to have lost its hearer's connotation like *aquí*, but we have found no evidence that it has taken over the first term *aquest*, either as a substitutive or as a synonymic form, as highlighted in our third research question. If that was the case, we should have found the same frequencies of occurrences of *aquest* and *aqueix* for the first subarea (within the peri-personal space of the speaker), which did not occur. What we have found, instead, was that the second term *aqueix* was used, although with low frequencies, almost exclusively for the second subarea (outside the

peri-personal space of the speaker and hearer). This might result in a residual medial connotation, rather than in a synonymic relation with the first demonstrative *aquest*, at least as far as the distance conveyance is concerned.

We provide two main explanations for our findings. The first explanation is that the reduction depends on more general cognitive mechanisms of basic perception. In line with Di Pellegrino & Làdavas (2015) and Hunley & Lourenco (2018), we claim that brain processes objects according to their reachability: around the body (peri-personal space) versus outside the body (extra-personal space). The fact that such a distinction maps onto separate brain systems might result in a reduction from three- to two-term opposition, which reflects a more basic and simpler primary reachable/non-reachable distinction. Although further cross-linguistic investigation is needed to bolster this finding, our hypothesis is supported by the fact that the majority of languages have a two-term demonstrative system, with the terms usually considered to correspond with a proximal-distal contrast (Diessel, 1999, 2005). The assumption would explain why the second term *aqueix* disappeared from the proximal/distal opposition, giving a binary system which is also the most dominant and basic across the world's languages (Diessel, 1999; Meira, 2003).

The second explanation we provide is that, in accordance with Hickey (2001), languages look for regularity and symmetrical sets of word forms.⁸ Therefore, the reduction from a three- to a two-term system might result from the paradigmatic relation of the system of demonstratives with the locative adverbs as immediate models. Immediate models deal with analogical change in chunks that generally appear together in adjacent positions or in frequently repeated pieces of speech, such as days of the week, months of the year and demonstratives and locative adverbs. Thus, if we assume that there is an asymmetry between the two-term locative adverbs and the three-term adnominal/pronominal forms and that languages work to solve asymmetries, we can expect a reduction of the demonstrative system for the sake of symmetry and balance in paradigmatic and structurally similar relations. Nevertheless, we have stressed that the type of reduction is

⁸ We must acknowledge that this symmetricity across structure is not always the case. In this respect, Dixon (2003) reports cases of two-term demonstrative systems accompanied by a three-term adverbial combination (e.g., Indonesian system of demonstratives)

different. In the case of adverbs, the second term shifted to the first position, while in the case of demonstratives the second term is just dropping out of the system, when conveying distance. In this respect, we agree with Pérez-Saldanya (2015) and Casanova (1993) that the shift of the second term locative adverb *aquí* to first degree of proximity has been determined by the fact that its original anaphoric value would have been covered by the clitic *hi* as locative complement indicating the source of the movement (Pérez-Saldanya, 2015: 130). Pérez-Saldanya (2015) identified three factors to explain the locative adverbs' trend of reduction. The first factor depends on the fact that locatives focus more on distance than on the potential space between speaker and hearer. If this is the case, this explanation also satisfies our hypothesis that, the disappearance of the second term *aqueix* is strictly connected to the fact that it is no longer used to convey information related to distance (however we only tested physical distance, our results do not account for use of demonstratives outside of the spatial domain.) The second factor highlighted by Pérez-Saldanya (2015) depends on the disuse of certain formal variants, and the third factor on the possibility of conveying additional locative information by other forms. Although, these factors might have affected the disappearance of the second term *aqueix*, when analysing adnominal/pronominal forms we agree that the original anaphoric value of *aqueix* could not be covered by other deictic elements in the language, other than additional reinforcing constructions, such as the proximal form *aquest* with a proximal adverbial form *aquí* (i.e., *aquest d'aquí*, this here). Unfortunately, the psycholinguistic task we used to elicit demonstrative production did not give participants the chance to use any reinforced construction in order to supply to the need of covering three potentially different degrees of proximity.

To sum up, we have found that the Majorcan Catalan system of demonstratives is undergoing a reduction from a three- to a two-term system of demonstratives, that is towards a simpler primary reachable/non-reachable distinction. The adnominal/pronominal forms *aquest* (this) and *aquell* (that) are the exclusive forms used to convey physical distance. Given the low frequencies of occurrence of the second term *aqueix* for medial locations, we claimed that the term is disappearing from the system and it is not used as a synonymic form of *aquest*. Its residual use might firstly depend on the fact that a language retains words that

are semantically different; and secondly that words survive the process of levelling when appearing in fixed expressions (Hickey, 2001). These explanations are also in line with analogical levelling processes, and specifically with the 4th and 5th laws by Kuryłowicz (1947). Specifically, when a form undergoes analogical reshaping, the new form takes over its primary function, and the old form remains only in secondary functions (for instance, English. *brother*, masc. singular vs. ~~*brethren*~~, masc. plural -> *brothers*, masc. plu.); moreover, in order to re-establish a distinction of central significance, the language gives up a distinction of more marginal significance (Millar, 2015: 106). Thus, since the central significance of demonstratives might be conveying a binary near/far opposition, the second term *aqueix* might be reshaped in its function and semantic connotation. This tendency would not be totally out of the ordinary, if we take into account that the same process occurred in Latin with the second term *ipse* (Da Milano, 2005; Casanova, 1993; Jungbluth & Da Milano, 2015; Pérez-Sandanya, 2015). As we have also underlined, there are different parameters affecting the choice and use of demonstratives during interaction. One of these parameters is the semantic connotation that words, such as nouns, enclose in and outside the interactive context (Rocca et al., 2018). These additional and contextual pieces of information might define the areas of applicability of specific terms, such as *aqueix*, which have been excluded from the basic near/far opposition, but reshaped in their function and semantic connotation to cover other domains.

In this respect, we acknowledge that follow-up studies are necessary to assess whether the reduction is consistent across communicative domains or limited to the conveyance of distance information. To that end, it would be useful to assess whether or not the system of demonstratives adopts parallel and additional structures to reinforce the loss of one of the three terms, such as recurring to the combination of the adnominal/ pronominal demonstrative forms plus adverbial forms to convey a wider range of degrees of proximity. Moreover, a more fine-grained analysis on the diachronic evolution of adnominal/pronominal forms and adverbs would be very useful to define the type of analogy occurring between the two classes of deictic expressions, as well as to identify the nature and the direction of the influence.

5. Conclusions

The system of demonstratives of Majorcan Catalan, one of the Balearic dialectal varieties of Catalan, presents a predominant proximal/distal opposition conveyed by two terms (i.e., *aquest/aquell*). Results from a psycholinguistic elicitation task suggest that space is basically divided into two parts: near and far. Simultaneous bilingual speakers of Spanish and Majorcan Catalan use the term *aquest* (originally designating the 1st person) to refer to the proximal and peri-personal space and use the term *aquell* (originally designating the 3rd person) to refer to the distal and extra-personal space. The low frequencies of use of the second term *aqueix* (originally designating the 2nd person) support the reduction from three- to two-terms of Majorcan Catalan. Its use might be due to a residual medial connotation, but does not show any synonymic relationship with the first term *aquest*. The reduction of the terms of the system of demonstratives only superficially mirrors the pattern of reduction of the locative adverbial forms and is in line with basic process of analogical levelling. Further diachronic and corpora (i.e., written and oral) investigations are necessary to discover the nature and the directionality of this process of paradigmatic reduction, and how *aqueix* is used in non-deictic domain.

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APPENDIX

The table reports the results of the Bilingual Language Profile (BLP) test performed by the bilingual sample. The column labelled “BLP Score” reports the subjects’ scores, which go from -218 to +218. A score near zero indicates balanced bilingualism; a more positive score indicates a preference for Spanish and a more negative score indicates and preference for Catalan. The column labelled “Language Preference” expressly reports in the preference for one of the two languages. The choice of positive and negative for Spanish and Catalan is totally arbitrary.

Subject	BLP Score	Language Preference
1	-68.39	Catalan
2	89.37	Spanish
3	-37.87	Catalan
4	-3.27	Catalan
5	83.1	Spanish
6	-35.96	Catalan
7	-13.03	Catalan
8	-129.68	Catalan
9	-0.64	Catalan
10	128.59	Spanish
11	37.87	Spanish
12	-13.08	Catalan
13	-74.11	Catalan
14	130.22	Spanish
15	0.57	Spanish
16	46.59	Spanish
17	81.46	Spanish
18	78.1	Spanish
19	-57.85	Catalan
20	44.05	Spanish
21	-97.45	Catalan
22	49.95	Spanish
23	-39.42	Catalan
24	56.4	Spanish
25	-80.01	Catalan
26	48.04	Spanish
27	-54.22	Catalan
28	13.08	Spanish
29	83.73	Spanish
30	-78.74	Catalan
31	44.05	Spanish
32	18.88	Spanish
33	28.34	Spanish
34	-57.34	Catalan
35	-38.96	Catalan
36	-64.3	Catalan