

GENDER AND CODA /s/ VARIATION IN THE SPEECH OF CORDOBESE CIS AND NON-BINARY TEENAGERS¹

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ABSTRACT. Previous variationist research on gender has primarily concentrated on how sociolinguistic variants help construct male or female identities. However, it has largely overlooked other non-normative identities that are integral to our contemporary societies. This is a variationist sociolinguistic study that draws on social constructionism to examine variation in the realization of coda /s/ (i.e. in syllable-final position) in the speech of Cordobese teenagers and its connection to cis female, cis male and non-binary gender identities. The term *cis* is used for individuals whose gender identity aligns with their assigned gender at birth, while *non-binary* individuals are those who do not adhere to the gender binary. The data were collected in sociolinguistic interviews with students aged 14 to 16 at a high school in Córdoba, Argentina. For the interview, conversational modules (Labov 1984) were designed with questions on specific topics, such as games, friendship and sexuality. A quantitative analysis of the data confirms a statistically significant gender-based effect on one of the coda /s/ realizations, with cis male speakers notably favoring the omission of /s/ (i.e. [Ø]) compared to cis female and non-binary speakers. Linguistic factors were shown to constrain the realization of this variable as well. The aspirated variant [h] was most frequent in all phonological environments except word-final prevocalic position, where full [s] prevailed. In contrast to earlier findings by Holmquist (2011) and Bernate (2016), this study found no evidence of any tendency for speakers of different genders to decrease the frequency of use of standard variants as the interviews progress. Additionally, by applying Zimman's (2021) multidimensional gender model, a qualitative analysis of the data explores how gender expression and roles can account for intra-group differences. By incorporating non-binary identities into the analysis of linguistic variation, this research extends current sociolinguistic debates surrounding gender and language, challenging the binary framework that has dominated the field. This study advocates for more inclusive research practices, acknowledging the significance of gender nonconforming identities in contemporary society and their rightful place in scientific discourse.

Keywords: coda /s/, gender, variation, non-binary identities

RESUMEN. Hasta la fecha, una gran cantidad de investigaciones variacionistas se ha enfocado principalmente en cómo las variantes sociolingüísticas contribuyen a la construcción de identidades masculinas o femeninas, dejando de lado otras identidades no normativas que constituyen nuestras sociedades contemporáneas. Este es un estudio sociolingüístico variacionista que se basa en el construccionismo social para examinar la variación en la realización de la /s/ en posición de coda (es decir, en posición final de sílaba) en el habla de adolescentes cordobeses y su relación con las identidades de género cis femenina, cis masculina y no binaria. El término *cis* se utiliza para describir a las personas cuya identidad de género se alinea con el género asignado al nacer, mientras que las personas no binarias son aquellas que no adhieren al binarismo de género. Los datos provienen de entrevistas sociolingüísticas con estudiantes de 14 a 16 años en una escuela

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secundaria en Córdoba, Argentina. Para las entrevistas, se diseñaron módulos conversacionales (Labov 1984) con preguntas sobre temas específicos, como juegos, amistad y sexualidad. Un análisis cuantitativo de los datos revela que el género tiene un efecto significativo en una de las realizaciones de /s/ en coda de sílaba. Los hablantes masculinos cis favorecen la omisión de /s/ (es decir, [Ø]) en comparación con las hablantes femininascis y los hablantes no binarios. Se identificaron, además, factores lingüísticos que influyen en la realización de esta variable: la variante aspirada [h] fue la más frecuente en todos los entornos fonológicos excepto al final de palabra antes de vocal, donde prevaleció [s]. A diferencia de estudios previos como los de Holmquist (2011) y Bernate (2016), los resultados no muestran una tendencia de los hablantes a disminuir la frecuencia de uso de variantes estándar a medida que progresan las entrevistas. Además, aplicando el modelo de género multidimensional de Zimman (2021), se realizó un análisis cualitativo de los datos que explora cómo la expresión y los roles de género pueden explicar ciertas diferencias intragrupalas. Al incorporar identidades no binarias en el análisis de la variación lingüística, se amplían los debates sociolingüísticos actuales sobre género y lenguaje, desafiando el marco binario que ha dominado el campo. Este estudio aboga por prácticas de investigación más inclusivas, reconociendo la relevancia de las identidades de género no normativas en la sociedad contemporánea y su lugar legítimo en el discurso científico.

Palabras clave: /s/ en coda de sílaba, género social, variación, identidades no binarias

1. Introduction

Variationist sociolinguists have studied how the realization of different variables may be influenced not only by linguistic factors but also social factors such as class, age, race, and gender. Concerning gender-preferential features, a widespread finding reports no qualitative difference in the choice of variants between men and women. However, a difference has been observed in the frequencies with which they use those variants (Holmes 2013). Particularly in Western communities, standard forms are often more frequent in women's speech than in men's speech, while men tend to use vernacular variants more often than women (Labov 1990).

In Spanish variationist sociolinguistics, a much-studied variable has been /s/ in coda position, that is, at the end of a syllable. Coda /s/ may appear in word-internal position—e.g., *lastimar* (“to hurt”)—or in word-final position—*vamos* (“let's go”). In Argentine Spanish, it may be realized as a full sibilant ([s]), aspirated ([h]), or entirely omitted ([Ø]).

This variable was first studied in the 1970s and has since attracted the attention of numerous scholars (Donni-de-Mirande 2000; Fontanella-de-Weinberg 1973; Terrel 1978). It has been examined in relation to various social factors, such as class, occupation, and sex, although the latter has often been considered to have no significant influence on its realization (Arroyo 2016; Ramirez & Almira Vázquez 2016; Terrel 1978). Although most previous studies have focused on adult speech, adolescence is a life stage where gender-based differences in language use may be particularly pronounced. According to Cameron (2005), adolescence tends to be characterized by a prevalence of same-gender affiliations, while gender segregation lessens during adulthood and active work life. Because linguistic repertoires are shaped through regular contact with peers, Cameron posits that the degree of quantitative difference in sociolinguistic variables between men and women is greater during adolescence than in later periods of life. Thus, selecting participants under 18 for the present study can reveal differences that were not previously noticed between gender groups.

This study also addresses the gender binary present in the description of many sociolinguistic variables. To date, much research has focused on how different variants may index a male or female identity, often failing to consider other gender

nonconforming identities that are increasingly recognized in present-day societies (see Becker *et al.* 2022; Zimman 2021). Sociolinguistic research on these identities can enhance the understanding of how sociolinguistic variables are influenced by gender and how they can also be resources that contribute to gender construction. As a response to Becker *et al.*'s (2022) call for the study of sociolinguistic patterns beyond the binary and in order to address the gap in what is currently known about variation and non-binary² identity, this study analyzes the influence of gender on the realization of coda /s/ not only in the speech of cis³ female and cis male speakers, but also in non-binary speakers.

The data were collected in a public high school in Córdoba, Argentina, through sociolinguistic interviews of approximately 40 minutes with three cis teenage boys, three cis teenage girls, and three non-binary individuals between the age of 14 and 16 years old. The frequencies of [s], [h] and [Ø] in the participants' speech were identified, and both the influence of linguistic factors and that of gender were analyzed. By including adolescent speakers and non-binary individuals, this study reveals not only patterns of coda /s/ variation across different gender identities, but also provides insight into variation during adolescence — a key period for gendered linguistic expression. Additionally, by examining intragroup differences within each gender category, this study aims to enhance the understanding of the individual nuances involved in gender construction.

The next section of the paper offers an overview of previous research on coda /s/ variation in Spanish, while section 3 reviews recent work on the relationship between language use and non-binary identities. The theoretical framework and the methodological decisions are outlined in sections 4 and 5, respectively. Section 6 presents the results of the analysis, with subsections examining the influence of gender, the influence of linguistic factors, the combined effect of gender and linguistic factors, and an intragroup analysis. Finally, Section 7 discusses the findings, and Section 8 offers the conclusions acknowledging the limitations of the study and indicating implications for further research.

2. Coda /s/ variation in Spanish

The realization of coda /s/ in Spanish has been widely examined in sociolinguistics (Lipski 2011), with studies consistently focusing on its correlation with social factors like sex, gender, and age, as well as various linguistic factors. As stated by Diaz Campos (2011: 2), Cedergren's (1973) study of coda /s/ omission in Panama is "regarded as the first variationist study examining Spanish data." A general finding in the study of language use and gender has been that women tend to favor features that are considered prestigious and refrain from using non-prestigious ones (Holmquist 2011), while men's speech tends to show the opposite pattern. A case in point is Fontanella-de-Weinberg's (1973) study of coda /s/ in Bahía Blanca, Argentina, which showed that women produced full [s] nearly 15% more frequently than men did in four different speech styles (spontaneous speech, formal, reading and word lists). Over the decades, additional research across Latin America found sex to influence coda /s/ variation. According to Fox (2006), the studies by Cedergren in Panama (1978),

²"Non-binary" or "Genderqueer" are terms used for individuals who "may identify as both male and female, as neither male nor female or as fluctuating between two binary gender expressions" (Corwin 2016: 256).

³ The term "cis" is used for individuals who feel identified with the gender they were assigned at birth.

Poplack (1980) in Puerto Rico, and Valdivieso and Magaña (1991) and Cepeda (2005) in Chile reported that men omitted coda /s/ more frequently than women. Holmquist (2008, in Silva-Corvalan & Enrique-Arias 2017, 2011) and Bernate (2016) observed that speakers' awareness of their usage affects /s/ retention, with women often showing higher retention at the start of interviews but eventually converging with men's omission rates as the interviews progress.

However, several other studies found that sex did not have a significant influence on the realization of /s/ in syllable-final position. Terrel's (1978) study of coda /s/ in Buenos Aires indicated that the influence of sex was not significant, and that age was a more influential factor, with younger speakers omitting /s/ more often than older ones. Donni-de-Mirande's (2000) study in Rosario, Argentina, showed only minimal differences, with men exhibiting slightly higher omission rates than women. Ramírez and Almira-Vázquez (2016) and Arroyo (2016) found that /s/ aspiration did not seem to correlate with sex in Cali, Colombia and Catamarca, Argentina, respectively.

Recent research highlights additional regional and social nuances in coda /s/ realization. Rogers and Bolyanatz (2022) reported that women in Chile preferred full [s] or [h], while men leaned towards omission. In Seville, Spain, Jiménez-Fernández and León y Castro-Gómez's (2023) and León y Castro-Gómez's (2024) found opposite tendencies, with a preference for coda /s/ omission among women and aspiration among men. Welker's (2024) research in Juchitán, Mexico, emphasized the highly localized meanings of linguistic variants, linking /s/ reduction to Zapotec identity, commonly associated with femininity and *muxe* identities (a third gender).

In relation to linguistic factors, the phonological environment was consistently found to play a role in coda /s/ realization. A tendency across studies was the preference for [h] in preconsonantal position, especially in word-internal position (Arroyo 2016; Bernate 2016; Jiménez-Fernández & León y Castro-Gómez 2023; León y Castro-Gómez 2024; Ramírez & Almira-Vázquez 2016; Terrel 1978;). In contrast, results for full [s] and omission are more varied and appear to depend significantly on geographical region. Full [s] seems to be the norm in many regions in pre-vocalic and pre-pausal position (Bernate 2016; Ramírez & Almira-Vázquez 2016; Terrel 1978). In contrast, omission is reported to prevail in most phonological environments in some communities in Puerto Rico (Holmquist 2011), Chile (Rogers & Bolyanatz 2022) and Seville (Jiménez-Fernández & León y Castro-Gómez 2023; León y Castro-Gómez 2024).

Another interesting antecedent to the present study is Cameron's (2005: 25) article "Aging and gendering," in which he investigates his prediction that the difference in speech between men and women is larger when they belong to age groups that favor same-gender affiliations. The author posits that, throughout the lifespan, men and women are segregated to varying degrees. Since a speaker's linguistic repertoire is influenced by the speech of their habitual interlocutors, "when sex segregation or separation is greatest, the degree of quantitative difference will be the greatest" and vice versa. To test his prediction, one of the variables Cameron studied was the realization of word-final /s/ in Puerto Rican Spanish. His data confirmed that during the teenage years and in old age (between 65 and 85 years of age), when sex segregation is at its peak, the degree of difference between men and women is greatest.

The aforementioned studies that found no significant differences in /s/ realization between men and women did not include teenage informants. Terrel's (1978) and Donni-de-Mirande's (2000) informants were above 25; Ramírez and Almira-Vázquez's (2016) and Arroyo's (2016) informants were above 18. The present study

will therefore focus on the speech of teenagers to determine whether there exists a considerable gender difference in the realization of /s/ within this age group.

3. Research on the speech of non-binary individuals

Previous research on /s/ has mainly considered the influence of sex, rather than gender. The distinction between sex and gender has been circulating in Western feminist thought for decades. While sex is widely considered to refer to biological differences based on genitalia, hormones, and chromosomes,⁴ gender is a social construction and is related to an aspect of identity that, from a social constructionist perspective, speakers are not born into but construct for themselves and index through language, social practices, and other semiotic resources (Fuller & Leeman 2020). Gender is not a binary category. In fact, numerous people around the world do not identify as either male or female but as non-binary or genderqueer. However, variationist literature that incorporates non-binary individuals is scarce. Bershtling (2014), Corwin (2016), Gratton (2016) and Becker *et al.* (2022) are some of the key contributors to an understanding of the semiotic work involved in the construction of these gender nonconforming identities.

Bershtling (2014) gathered data from face-to-face interviews with six Israeli genderqueer individuals aged 19 to 31, examining the role of Hebrew in the performance of their gender identities. The study found that participants strategically subvert linguistic constraints of Hebrew (e.g. by employing inverse gender marking) to affirm their non-binary identities. In her ethnographic study, Corwin (2016) analyzed a genderqueer individual's use of semiotic resources to perform his⁵ non-normative gender identity in interactions with other 15 genderqueer individuals and interviews with the researcher. The study identified a range of resources, including linguistic features, gestures, and clothing, underscoring how multiple semiotic resources work together to convey gender identity.

Becker *et al.* (2022) analyzed the influence of gender on creaky voice⁶ in American English speakers. The data were drawn from recordings of 43 participants aged 18 to 35, including 17 who identified as non-binary. Their results show that non-binary individuals assigned female at birth who were on testosterone exhibited sharp style shifts, which was interpreted as an indication of distance from normative femininity. This finding challenges previous assumptions that gender predicts the use of creaky voice and shows that, in fact, gender interacts with style.

The most relevant antecedent to this study is Gratton's (2016), who studied (ING)⁷ variation in the speech of two non-binary speakers from Toronto in their early twenties. The (ING) variable has been found to index gender identity, with female speakers showing preference for standard [ɪŋ] and male ones for non-standard [ɪn]. Gratton discovered that, in non-queer spaces, participants tended to favor the linguistic variant that indexed a gender identity opposite to the one they were assigned at birth. This behavior was linked to concerns about being misgendered, leading participants to employ semiotic resources to distance themselves from cis-normative expectations.

⁴ Some theorists like Judith Butler (1990), however, have gone so far as to posit that sex itself is also a socio-cultural construct.

⁵Henry, the focal individual of the study, chose he, him, his as his pronouns.

⁶Creaky voice is a voice quality stereotypically associated with women.

⁷The "-ing" suffix in English exhibits variation between the standard variant [ɪŋ] and the vernacular one [ɪn].

This insight is particularly pertinent to our examination of coda /s/ realization, as it underscores the role of social context in shaping non-binary speakers' use of phonological variation in constructing and asserting their identities.

The present paper is situated within the growing body of research that acknowledges the need to explore gender nonconforming identities more thoroughly. By incorporating non-binary individuals, our work aims at contributing to the understanding of how language variation intersects with gender diverse identities. As societal recognition of non-normative gender identities grows, it becomes increasingly important to examine how these identities relate to and are constructed through the use of language.

4. Theoretical framework

This study is situated within the framework of variationist sociolinguistics, whose goal is “to reveal and analyze sociolinguistic patterns, that is, correlations between variable features (...) and external social factors such as social class, age, sex, network, and style” (Romaine 2003: 98). From a variationist point of view, one important way in which language reveals itself as a structured system is through the fact that variation is not random, but conditioned by internal linguistic and external social factors (e.g. Chambers 1995, Labov 1972a, Meyerhoff 2016, among others).

The social variable that this study focuses on is gender. The term “sex” is not adopted here, as its historical association with biology might mistakenly suggest that it is the physiological differences between men and women that condition linguistic differences. Gender, on the other hand, is a social construct and involves cultural meanings. Variationist studies, however, have typically assumed a gender binary (Becker *et al.* 2022), which “implicitly retains the belief in a mimetic relation of gender to sex whereby gender mirrors sex or is otherwise restricted by it” (Butler 1999: 10). This study intends to avoid the erasure of non-normative gender identities by including the voices of non-binary individuals.

The social constructionist approach, which is adopted in this study, views identity as a construction rather than something given or fixed. Butler (1990: 33) holds that gender, like other aspects of identity, is a performance, which means that a person's behavior is what constitutes their gender: “There is no gender identity behind the expressions of gender; that identity is performatively constituted by the very ‘expressions’ that are said to be its results.” Butler argues that when individuals are assigned to a specific gender category, like male or female, they are placed in situations where they learn to perform certain behaviors repeatedly, which together create the appearance of gender as an essential part of who they are. But because gender is built through repeated acts over time, it can be reshaped by disrupting or altering these repeated patterns of behavior, and thus, individuals — particularly those who do not identify with their assigned gender — can shape their gender identities in alternative ways.

Identity is then seen as the product of linguistic and semiotic practices (Bucholtz & Hall 2005). A single linguistic feature such as the omission of coda /s/ can be part of the set of semiotic elements that combine to index a certain gender identity. However, Ochs (1992) proposed moving away from a simplistic understanding of the relationship of indexicality between semiotic elements and social meanings. Rarely do linguistic features directly index a given social category. Rather, they index certain stances, acts, or activities that may, in turn, be associated with a given gendered identity (Ochs 1992). A more complex notion of indexicality such as this one allows researchers to go beyond merely describing which social groups produce a given variant of a variable more

frequently, and instead attempt to explain why that is so and what social meanings those features carry. As Eckert and Podesva (2021: 30) state, “an approach centered around social meaning, we argue, can better explain gendered distributions of sociolinguistic variables while also providing insight into the social construction of gender.”

While a variationist framework provides valuable insights into correlations between linguistic variables and social categories, it also presents some limitations. As already mentioned, variationist studies have traditionally been based on binary gender assumptions, which may fall short of capturing the complexity and fluidity of non-binary identities. In addition, early quantitative variationist studies have been interested in statistical patterns showing correlations between macro-level social categories like sex and variation, rather than delving into the nuanced social meanings that linguistic variants can index. Complementing our quantitative approach to sociolinguistic variation with a constructivist perspective on gender and Ochs’s (1992) concept of indexicality can enrich our understanding of the connection between variation in the use of coda /s/ and diverse gender categories.

5. Methods

The data for this study have been drawn from a corpus of interviews carried out in Córdoba, Argentina. Each of them lasts around 40 minutes and consists of a sociolinguistic interview with teenagers between 14 and 16 years of age, all students in the same public high school in Córdoba. This school is known for its academic prestige, and since it is state-run, most of its students come from middle class backgrounds. During the interviews, participants were asked questions about various topics of general interest to adolescents, such as friendships, arguments, dating, sexuality, games, gender, and religion. The set of questions was adapted from Labov’s (1984) conversational modules and was designed to elicit personal narratives from the participants and engage them in casual speech, as it is widely known that the less attention speakers pay to their speech, the more vernacular features they tend to produce (Labov 1972b). The interviews also served to collect demographic information. Participants were asked about their place of residence, their parents’ occupation and educational level, as well as their extracurricular activities.

With the help of school representatives, nine participants from 3rd and 4th-year courses were selected for the interviews. This selection was not random but determined by the students’ availability and willingness to participate. The final group included three cisgender boys, three cisgender girls, and three non-binary individuals. All participants were born in Córdoba, Argentina. They are all native speakers of Argentine Spanish and exhibit speech features of what Lipski (1994: 162) identifies as “the central region, centred on Córdoba.” All except for one non-binary speaker, who belongs to the working class, are from middle-class backgrounds. Notably, all non-binary speakers in the sample were assigned female at birth (AFAB), as no non-binary individuals assigned male at birth (AMAB) were accessible. This is a limitation to the study since the sample only partially represents the diversity of non-binary identities.

All the interviews for the study were conducted by the first author, a cisgender woman in her mid-twenties.⁸ The interviews took place in a small room provided by

⁸It is reasonable to assume that the participants’ perception of the interviewer’s identity had an influence on features of their speech, as predicted by Bell’s (1984, 2001) audience design model. Indeed, what was noticed by the interviewer was a greater predisposition among cis girls and non-binary individuals to provide more details about their experiences than among cis boys. However, the study was not designed

the school's linguistics department. Only the researcher and the interviewee were present. The students signed informed consents to be recorded and their parents were asked to sign authorizations allowing their children to participate in the study. They were assured that their names, as well as those of people and places they mentioned, would not be disclosed by the researchers. Therefore, pseudonyms are used in all the tables and transcriptions included below.

The interviews were transcribed orthographically by one of the researchers with the help of Google Pinpoint. All the instances of coda /s/ were labeled (S for sibilant, H for aspiration and Ø for omission) in the transcriptions so that they could be extracted for analysis. The labelling of the cases was double-checked by the researchers. As done by Bernate (2016), instances where coda /s/ occurred before another /s/ were excluded due to the difficulty in determining whether /s/ had been omitted or had merged with an /s/ sound at the beginning of the next syllable. For example, in extract (1), taken from an interview with one of the participants, the instance of coda /s/ that appears in bold occurred before another /s/. This instance was therefore not included in the analysis.

- (1) *seguimos siendo amigas*
 'we're still friends'

Once the instances for analysis were selected, the variant used in each case was transcribed, and the percentages of each variant were calculated for each speaker and gender group. ANOVA tests were run to determine whether gender has a statistically significant effect on the different realizations of the variable. ANOVA was selected for its effectiveness in comparing means across multiple groups, which allows for an assessment of whether differences in /s/ realization can be attributed to gender. Additionally, the percentage of the non-standard variant [Ø]⁹ in the first 5 minutes and the last 5 minutes of each interview was calculated to determine whether gender influences different realizations of /s/ at the beginning and at the end of interviews, as previous research has found (Holmquist 2011; Bernate 2016). Only the first and last 5 minutes were considered for this analysis, as not all interviews were of the same length. Lastly, to account for varying interview lengths, only the middle 20-minute period of each interview was considered to study the effects of linguistic factors. The sounds following each instance of coda /s/ in the participants' speech were identified, and each occurrence was classified according to the phonological environment: word-final pre-consonantal (WFPC), word-final pre-vowel (WFPV), word-final pre-pausal (WFPP) and word-internal (WI). The number of occurrences and percentages of each variant were then calculated for each environment.

Finally, an intragroup analysis was conducted in order to account for intragroup differences by considering the interplay among the different gender dimensions proposed by Zimman (2021): gender identity, assignment, role and presentation. According to the author, "the study of non-normative genders requires a distinction between different elements of gender and sex that goes beyond what is typically found in sociolinguistic research" (Zimman 2021: 72). He proposes a multidimensional model of sex and gender that encourages analysts to consider different dimensions of these variables and allows for a more comprehensive understanding of gender variation. Although this model was designed for ethnographic research, in the present study, this

to determine or measure the effect that the interlocutor might have on each individual's use of the variable, which could have involved having interviewers of different genders conduct the interviews.

⁹In Argentina, the omission of coda /s/ is considered to be non-standard. Previous research has associated omission with lower socioeconomic groups (Aleza-Izquierdo 2010; Egido&Morala 2009).

information was collected from the participants during the interviews. They were asked about their gender identity (i.e., the gender category with which they identify), the gender they were assigned at birth, and aspects related to their gender role, such as what pronouns people use to address them and whether their family and friends recognize (or are aware of) their gender identity. Notes were taken about different semiotic elements deployed by the participants, such as clothing, makeup, and piercings, to gather information about their gender expression.

6. Results

This section presents the results of the analysis organized in four different subsections: gender effects, linguistic factors, the interaction of gender and linguistic factors, and intragroup variation. Analyzing gender and linguistic factors independently allows for a clear understanding of each factor's distinct influence on coda /s/ variation before examining their combined effect.

6.1. The influence of gender

A total of 5,781 instances of coda /s/ were found in the corpus. As expected, the three variants present in the participants' speech were [s], [h] and [Ø]. All speakers fluctuated among the three variants, but the frequencies of use differed. ANOVA tests were conducted to determine whether the influence of gender on the different realizations of /s/ has a statistically significant effect. P-values were calculated using a two-way ANOVA with Tukey's multiple comparisons test. The applied comparison model within the ANOVA meets the assumptions of normality and demonstrates a homogeneous distribution of residuals, supporting the validity of the statistical analysis conducted. Table 1 shows the general tendencies of the gender groups.

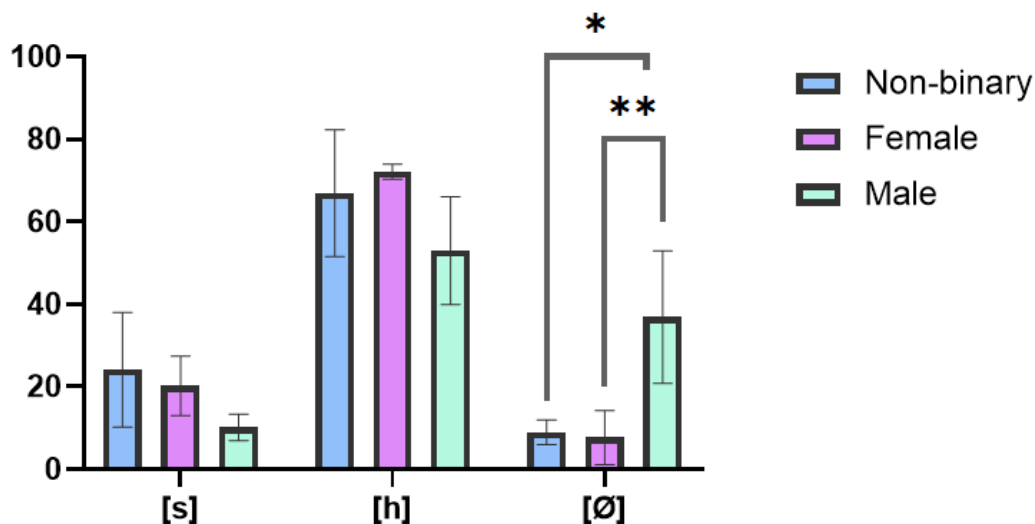
Table 1. Variation of coda /s/ in non-binary, female and male groups of speakers

Gender identity	[s]	[h]	[Ø]
Non-binary	24%	67%	9%
Female	20%	72%	8%
Male	10%	53%	37%

The different gender groups produced the coda /s/ variants at varying frequencies. Overall, the three gender groups prefer the variant [h]. The percentages for cis teenage girls and non-binary speakers are relatively similar, with the largest difference being 5% in their production of the aspirated variant, a difference that was not calculated to be statistically significant ($p > 0.05$). Cis teenage boys, however, show distinct preferences compared to the other two groups. Their use of the full and aspirated variants is lower (although not statistically significant: $p > 0.05$) while the percentage of the non-standard [Ø] variant is significantly higher ($p < 0.05$).

Figure 1 below shows that the largest difference among the gender groups is the frequency with which they omit /s/. Data are presented as mean \pm SD, i.e. the mean for each gender group together with the dispersion of the data points around each mean. Statistical significance is indicated as follows: * $p \leq 0.05$, ** $p \leq 0.01$.

Figure 1. Percentages of the three different variants in the speech of the three gender groups



The ANOVA group-based comparisons show that gender does not significantly affect the aspirated form, $F(2,6) = 2.13$ ($p > 0.05$), or the full form, $F(2,6) = 1.82$ ($p > 0.05$). However, gender does have a statistically significant influence on omission, $F(2,6) = 7.94$ ($p < 0.05$). Pairwise comparisons reveal no significant difference in omission between cis girls and non-binary individuals, $F(1,4) = 0.09$ ($p > 0.05$). Statistically significant differences emerge when comparing cis girls with boys, $F(1,4) = 8.55$ ($p < 0.05$), and non-binary speakers with cis boys, $F(1,4) = 8.78$ ($p < 0.05$). Figure 1 shows that unlike cis girls and non-binary speakers, cis boys exhibit a greater variability in the omission of /s/, with one of the cis boys, Caleb, exhibiting a significantly lower proportion of this variant than the other cis boys as will be explained in section 6.4.

As mentioned earlier, previous research on this variable has shown that women tend to omit /s/ more frequently at the beginning than at the end of sociolinguistic interviews (Holmquist, 2011; Bernate, 2016). To verify whether this was the case in the present study, the percentages of omission in the first and last 5 minutes of each interview were calculated for each speaker. These percentages are presented in Table 2, along with the difference in omission between the beginning and end of the interviews. A “+” symbol indicates an increase in omission, while a “-” indicates a decrease.

Table 2. Percentage of omission at the beginning and the end of the interview

Gender	Speaker	Beginning	End	Difference
Non-binary	Sage	8%	13%	+5
	Ray	8%	6%	-2
	Conan	9%	14%	+5
Female	Sonia	8%	20%	+12
	Nora	3%	3%	0
	Zena	2%	0%	-2
Male	Cole	39%	43%	+4
	Caleb	3%	21%	+18
	Gus	47%	38%	-9

The table shows that some speakers increased their use of the non-standard variant throughout the interview, others reduced it, and one speaker showed no change. Contrary to previous findings (see Bernate, 2016), no clear gender-related patterns emerged. That is, there was no significant difference between the production of [Ø] at the beginning and end of the interviews among the different gender groups. One possible explanation for this discrepancy may be the interviewer's perceived status. In an interaction with a young woman who may not have been viewed as a strong authority figure, the participants may have felt at ease and less compelled to attune their speech to the norms they assumed the interviewer observed.

6.2. The influence of linguistic factors

Table 3 summarizes the percentages of all speakers' realization of /s/ in different phonological environments. The preferred form in each environment is marked in bold. Overall, speakers preferred the aspirated form in word-final position before another word (regardless of the following word's initial sound) and in word-internal (WI) position. The full form was preferred in word-final pre-pausal (WFPP) position.

Table 3. Variation of /s/ in different phonological environments

Phonological environment	Variant	Percentage (N)
Word-final position before a consonant sound (WFPC)	[s]	4.6% (N 35)
	[h]	68.2% (N 516)
	[Ø]	27.2% (N 206)
Word-final position before a vowel sound (WFPV)	[s]	13.4% (N 39)
	[h]	64.7% (N 189)
	[Ø]	21.9 (N 64)
Word-final position before a pause (WFPP)	[s]	88.4% (N 214)
	[h]	2.5% (N 6)
	[Ø]	9.1% (N 22)
Word-internal position (WI)	[s]	1% (N 4)
	[h]	96.1% (N 365)
	[Ø]	2.9% (N 11)

The full form was very rarely found in WI or in word-final pre-consonantal (WFPC) position, while omission was infrequent in WI position. As mentioned, the only environment where the aspirated form was not preferred was WFPP, where its frequency was as low as 2,5%.

6.3. Gender and linguistic factors

Table 4 shows the percentages of the three different realizations in various phonological environments across the three gender groups. Each group's preferred variant in each phonological environment is marked in bold. The only difference in preference appears when /s/ occurs in WFPC position. In this environment, cis teenage girls and non-binary speakers prefer [h], while cis teenage boys favor [Ø]. Notably, teenage boys rarely produce the full form in this environment, while teenage girls and non-binary speakers produce it more frequently.

Table 4. Percentages of variation according to the phonological environment

Phonological environment	Variant	Cis teenage boys	Cis teenage girls	Non-binary speakers
Word-final position before a consonant sound (WFPC)	[s]	0.4% (N 1)	7.3% (N 20)	6.5% (N 14)
	[h]	46.1% (124)	79.1% (N 216)	81.9% (N 176)
	Ø	53.5% (N 144)	13.6% (N 37)	11.6% (N 25)
Word-final position before a vowel sound (WFPV)	[s]	5.3% (N 5)	14.5% (N17)	21.25% (N 17)
	[h]	48.4% (N 46)	76.1% (N 89)	67.5% (54)
	Ø	46.3% (N 44)	9.4% (N 11)	11.25% (N 9)
Word-final position before a pause (WFPP)	[s]	72.4% (N 55)	96% (N 93)	95.7% (N 66)
	[h]	1.3% (N 1)	2% (N 2)	4.3% (N 3)
	Ø	26.3% (N 20)	2% (N 2)	0% (N 0)
Word-internal position (WI)	[s]	0.7% (N 1)	0.7 (N 1)	2% (N 2)
	[h]	92% (N 126)	98.6% (N 137)	98% (N 102)
	Ø	7.3% (N 10)	0.7% (N 1)	0% (N 0)

When /s/ occurs in word-final position before a vowel, although all groups prefer [h], cis teenage girls exhibit a stronger preference for this variant compared to the other groups. Teenage boys omit /s/ almost as frequently as they produce [s], and non-binary speakers show a higher percentage of [s] than the other two groups. When /s/ occurs before a pause, all speakers favor the full form, although cis teenage girls and non-binary speakers choose this variant at nearly the same frequency and much more often than teenage boys. In WI position, the three groups display similar percentages for their preferred variant, the aspirated form, with teenage girls and non-binary speakers showing almost identical frequency of [h]. In all phonological environments, cis teenage boys omit /s/ much more frequently than the other two groups.

6.4. Intragroup analysis

This section addresses differences within each gender group, providing a deeper understanding of how different dimensions of the gender construct interact with and influence linguistic choices. Table 5 shows the specific percentages and occurrences of

the variants for each individual speaker. Ray, Caleb and Sonia exhibit slightly different omission rates from the other members of their gender groups. While Ray and Caleb omit /s/ less frequently than other non-binary and boy speakers respectively, Sonia omits /s/ more often than other girls.

Table 5. Variation of coda /s/ in individual speakers

Gender identity (gender assignment)	Speaker	[s]	[h]	[Ø]	Total coda /s/
Non-binary (AFAB)	Sage ¹⁰	19.6% (N 153)	68.8% (N 538)	11.6% (N 91)	782
	Ray	13% (N 62)	81.3% (N 387)	5.7% (N 27)	476
	Conan	39.7% (N 228)	50.7% (N 291)	9.6% (N 55)	574
Female (AFAB)	Sonia	14% (N 142)	71.6% (N 729)	14.4% (N 147)	1,018
	Nora	18.6% (N 192)	74.2% (N 766)	7.2% (N 74)	1,032
	Zena	28% (N 102)	70.6% (N 257)	1.4% (N 5)	364
Male (AMAB)	Cole	11.3% (N 51)	51.6% (N 234)	37.1% (N 168)	453
	Caleb	12.6% (N 88)	66.7% (N 466)	20.7% (N 145)	699
	Gus	6.5% (N 25)	40.7% (N 156)	52.8% (N 202)	383

For an intragroup analysis of coda /s/ realization, Zimman's (2021) multidimensional gender model proved highly useful. Zimman claims that variationist sociolinguistic research often relies on a binary gender model, and participants are classified according to the researcher's perception of their physical appearance. However, this traditional model falls short in capturing the complexity of gender

¹⁰All speakers appear under a pseudonym in order to preserve their identity. Some of the pseudonyms were chosen by the speakers themselves and others by the researcher.

diversity, especially when applied to non-normatively gendered identities. By considering different dimensions of gender, such as gender identity, assignment, role, and presentation or expression, Zimman's model offers a more nuanced understanding of how gender is constructed.

Gender expression, for instance, may explain why Ray presents the lowest percentage of omission among non-binary speakers (5,7% as shown in Table 5). On the day of the interview, Ray deployed semiotic resources that, in the cultural context of Córdoba, are considered more normatively feminine than those deployed by Sage and Conan. The latter two wore normatively masculine, oversized clothes, while Ray presented a more stereotypically feminine appearance by wearing a skirt and earrings. In their interviews, both Sage and Conan discussed their wish to be perceived as more masculine, while Ray expressed his¹¹ desire to appear hegemonically female, as shown in Extract (2).

(2) Ray: *No sé, siempre me siento raro. Y no me gusta cómo me veo, me gustaría verme de otra forma.*

'I don't know, I always feel weird [masc.].¹² And I don't like how I look, I'd like to look different.'

Interviewer: *¿Cómo te gustaría?*

'How would you like to look?'

Ray: *Y ser un poco más hegemónico capaz...*

'Maybe a bit more hegemonic [masc.].'

Interviewer: *¿En qué sentido?*

'In what sense?'

Ray: *Y ser como típica chica bonita flaca. Me gusta el trato que... O sea me gusta más el trato que le da a la sociedad a las chicas que los chicos...*

'Maybe like the typical pretty [fem.], skinny [fem.] girl. I like the treatment... I mean I like how girls are treated by society better than how boys are.'

Ray's low percentage of /s/ omission aligns more closely with the rates exhibited by cis girls than those of the other non-binary speakers. Therefore, that proportion of [Ø] could be interpreted as a resource that, in combination with others, contributes to the expression of gender identity.

Among all the speakers who were AFAB, Sonia shows the highest frequency of omission of /s/ (14.4%), with a notable difference compared to the other two cis teenage girls (who exhibit omission rates of 1.4% and 7.2%). A broad understanding of gender roles can explain this. Throughout the interview, Sonia discusses her struggle to conform to the normatively feminine image that her parents expected of her. In Extract (3) she mentions that her family disapproved of her clothing choices and did not think that soccer was a sport for girls. Despite facing criticism, she presents herself as

¹¹The pronouns chosen to refer to each participant were the pronouns they themselves expressed a preference for.

¹²As opposed to English, the Spanish language has gender markings for adjectives and nouns. These marks are important resources for constructing gendered identities, which is why the notations [masc.] and [fem.] are included in the English translations wherever gender markings were included in the original Spanish statements.

someone unafraid to defy expectations and gender stereotypes, which may correlate with a higher percentage of non-standard [Ø] compared to the other cis teenage girls.

- (3) Sonia: *Pero sí, siempre se me se me cuestionó el fútbol y yo siempre fui a decir, “Pero ¿por qué? Si yo en la calle juego al fútbol, ¿por qué no puedo ir a un club? O sea, ¿en qué cambia?” Y era también el tema, por ejemplo, de cómo me visto yo ahora... O me vestía hace unos años... Del tema de la ropa grande y era el, “No. Vestite más... más chico, con la ropa más chica porque así vas a estar más femenina.”*

‘But yeah, I’ve always been questioned for playing soccer and I always said, “But why? I play soccer on the street, why can’t I play in a soccer club? I mean, what’s the difference?” And it was also, for example, [their questioning of] how I dress now... Or how I used to dress a few years ago... The issue of oversized clothes, and they were like, “No. Dress more, tighter, with tighter clothes because you’ll look more feminine that way.”’

As for the male speakers, Caleb shows a significantly lower frequency of /s/ omission than the other boys. Gender role may also provide insights into this tendency. While Cole and Gus prefer same-gender affiliations, Caleb is the only cis boy who mentions having as many female friends as male friends. Caleb’s class appears to be divided, with boys sitting on one side of the room and girls and LGBTQ+ teens on the other. He reports being one of the few who maintain good relationships with both groups. In Extract (4), Caleb mentions that although he is friends with the boys, he is not afraid to express his feminist beliefs, even if he knows they will tease him. During the interview, he does not present himself as stereotypically masculine; in fact, he mentions crying during a conversation with his father, portraying himself as sensitive and emotional.

- (4) Caleb: *Yo... Para mí el feminismo está muy bien, que se defienda todo- todo los derechos que posee la mujer y que el hombre no tenga privilegios por encima de ella.*

‘I... In my view, feminism is very good, standing up for... for all rights that the woman possesses and the man should not have privileges over her.’

Interviewer: *Bien, ¿y sentís que lo podés decir al frente de los chicos o te molestan por decirlo?*

‘Okay, and do you feel you can say that in front of the boys or do they tease you about it?’

Caleb: *No, sí, o sea... Sí lo digo, pero me molestan lo mismo.*

‘No, yeah, I mean... I do say it, but they tease me all the same.’

Interviewer: *¿Y qué te dicen?*

‘What do they say?’

Caleb: *Nada, me dicen, “Ah vendido”, no sé qué. “Pollera” me dicen. No les doy bola yo.*

‘Nothing, they say, “Oh you sell-out [masc.]” I don’t know what else.

“Whipped”, they say. I ignore them.’

Together with the analyses offered in the previous subsections, this intragroup analysis demonstrates that a small linguistic feature like /s/ can be part of the semiotic resources (along with other linguistic features, clothing, make-up, hairstyle, and so on) that contribute to constructing a specific gender identity. While Ray’s, Sonia’s, and Caleb’s omission frequencies are generally aligned with their gender group, their subtly different individual behavior can be interpreted as expressing distinction from some aspect associated with it. Although general tendencies can be observed across the three gender groups, idiosyncratic linguistic behavior within each one warrants further analysis. As shown, a comprehensive understanding of the multiple dimensions of gender proves useful in explaining these deviations from group trends.

7. Discussion

The present study aimed to analyze the variation of coda /s/ in the speech of Cordobese teenagers and to determine whether its realization is influenced by gender. The ANOVA tests showed that gender does have a statistically significant effect on one of the realizations of this variable, namely the omission of /s/. The difference becomes evident when comparing cis teenage boys to the other two gender groups, with the former producing considerably higher frequencies of [Ø] than the latter. However, there was no statistically significant difference between cis girls and non-binary speakers.

Although previous works by Fontanella-de-Weinberg (1973) and Cameron (2005) report on differences in the realization of coda /s/ in the speech of men and women, many studies have found these differences to be statistically insignificant (Arroyo 2016; Donni-de-Mirande 2000; Ramirez & Almira Vázquez 2016; Terrel 1978). As mentioned previously in the paper, these researchers studied the speech of informants above 18 years of age. In the data collected for the present study, the difference in

omission between the gender groups is significant and seems to be related to the age of the participants. As posited by Cameron (2005), during the teenage years, gender distinctions come to the forefront, and the differences in the proportions of coda /s/ variants can help speakers in the construction of their gender identities.

Based on the data gathered during the interviews, the difference between boys and the other gender groups may be explained by the fact that the non-standard variant can index a sense of ease and a carefree attitude, which in turn points to a stereotypically masculine teenage identity. Meyerhoff's (2001) work on social theory helps frame these findings, suggesting that the indication of convergence and divergence through linguistic forms can account for many cases of sociolinguistic variation. The participants' tendency to omit or retain /s/ may relate to a drive to maximize fit with other members of their gender group. Coda /s/ omission, in combination with other linguistic features, may signal convergence with other teenage boys and divergence from other gender groups, such as teenage girls or non-binary speakers, while retention may signal the opposite. However, these explanations should be analyzed further in future research. The potential for ethnographic work to examine the relationship between these patterns of pronunciation and identity construction is considerable, as it can capture the cultural grounding of these linguistic behaviors in ways that quantitative methods alone cannot (Zimman, 2021).

The findings also suggest that coda /s/ variation is influenced by gender assignment, not only gender identity. It is important to highlight that this study considers gender assignment — not biological sex — as a variable of interest. The speakers' physiological traits such as chromosomes, hormones and anatomy were not factors in the analysis. Drawing on Butler's (1990) perspective, we argue that gender assignment impacts the types of socialization experiences individuals undergo, which are fundamental in shaping sociolinguistic style. Our results are compatible with Zimman's (2021) findings that assignment had a considerable influence on the center of gravity (COG) for /s/¹³ in American English transgender speakers, with AFAB non-binary speakers exhibiting a higher COG for /s/ than their AMAB counterparts. Although the present study lacks non-binary AMAB participants for a direct comparison, the observed differences between cis boys, cis girls, and non-binary AFAB teens here similarly highlight the influence of gender assignment.

The similarity in variation between the speech of cis teenage girls and non-binary speakers might also align with Gratton's (2016) findings. As mentioned earlier, the non-binary individuals in that study expressed a fear of being misgendered when they found themselves in non-queer spaces, leading them to use more semiotic resources associated with the gender that they had not been assigned at birth. The linguistic behavior of non-binary speakers in the present study may reflect their negotiation of identity in what they perceive as a "safe space"¹⁴, a concept explored in Gratton (2016: 55). From the very beginning of the interview, they were openly asked about their preferred pronouns and gender identity, so they may not have perceived the threat of being misgendered. Additionally, at the time of the interview, none of the non-binary participants had fully disclosed their gender identity to their parents, so they seemed to

¹³The variable studied by Zimman (2021) is word-initial /s/ in American English, measured through its center of gravity (COG) as an acoustic property. In contrast, the present study examines coda /s/ in Spanish, focusing on its retention and omission. While these variables differ phonetically, the findings align in illustrating how gender assignment influences sociolinguistic variation.

¹⁴A safe-space is "a space where marginalized groups can feel secure expressing themselves without being subject to mainstream norms and stereotypes, and are free from derogatory terms and hurtful comments" (Gratton 2016: 55).

perform a more feminine gender role in some social contexts such as at home. This partial alignment with traditionally feminine behaviors may help to account for their similarity to cis girls in terms of coda /s/ omission frequencies. In future investigations, it would be interesting to analyze whether these tendencies change in different social environments and when including AMAB non-binary speakers.

Previous research has found that female speakers tend to produce more standard variants at the beginning than at the end of sociolinguistic interviews, probably as an effect of the presence of the researcher (i.e. the observer's paradox) since they decrease the use of standard variants as they become more comfortable with the interviewer and the recording devices (Bernate 2016; Holmquist 2008, 2011). However, the data in the present study do not show gender to have any influence on this phenomenon. As shown above, some speakers increased their use of [Ø], while others reduced it, but this seems unrelated to their gender identity.

It is important to note that the study's relatively small sample size (n=9) limits the generalizability of the findings on gender and language use. But although the sample may not be representative of the school population, the data provide valuable insights into gendered sociolinguistic variation among adolescent speakers in Córdoba. Acknowledging this limitation underscores the preliminary nature of these findings and highlights the need for studies with larger samples to validate them.

Regarding linguistic factors, the results of this study are similar to previous research on coda /s/, though they also contradict some earlier findings. Terrel (1978) and Lipski (1984, in Fox 2006) found that, in Argentina, aspiration is the norm in WFPC position and in WI position, while full [s] is prevalent in WFPP position. These frequencies were confirmed by the present study's results. However, both authors found [s] to be the norm in WFPV position, which was not the case in the present data from the city of Córdoba. The participants of the present study preferred the aspirated form in this phonological environment. There are several possible explanations for this difference. Terrel's (1978) and Lipski's (1984) data were not collected in Córdoba, so this feature may be produced differently in this city compared to other cities, such as Buenos Aires. Additionally, their studies were carried out with older participants. It might be that teenagers produce [s] at different rates from adults in some contexts. More research is needed to confirm whether these or other factors account for the different results. As for the interaction between gender and linguistic factors, the most apparent difference was that in WFPC position, teenage boys showed preference for omission, while the other two gender groups preferred aspiration.

Finally, a qualitative analysis of intra-group differences provided some insights into idiosyncratic constructions of gender identities. Zimman's (2021) multidimensional model of sex and gender was useful for explaining the different layers of meanings indexed by some speakers' different frequencies of /s/ realizations compared to other members of their gender group.

8. Conclusions

This study has shown that gender does have an effect on the realization of coda /s/ in the speech of Cordobese teenagers. The non-standard [Ø] variant is produced more frequently by cis teenage boys than by cis teenage girls and non-binary speakers. These findings, supported by ANOVA tests, indicate a statistically significant preference for coda /s/ omission among cis boys, suggesting that this phonetic feature may be intertwined with broader social constructs of masculinity. Contrary to previous

findings, no differences were found in relation to the omission of /s/ at the beginning and end of the sociolinguistic interviews among the different gender groups. Regarding linguistic factors, the aspiration of /s/ is generally preferred in WI, WFPC, and WFPV position, while full [s] is preferred in WFPP position. When linguistic factors are combined with gender, the only difference in preference appears when /s/ occurs in WFPC position. In this case, cis teenage boys prefer [Ø] while cis teenage girls and non-binary individuals prefer [h]. Overall, these findings suggest that the realization of a particular linguistic feature, coda /s/, most likely in conjunction with other linguistic features, semiotic elements, and social practices, can contribute to the construction of specific gender identities. High proportions of coda /s/ omission in the speech of cis teenage boys may index a carefree attitude, and in turn reflect stereotypically masculine identities.

Future research should continue to explore the social meaning of coda /s/ variation in adolescent speech by combining both qualitative and quantitative approaches. On the one hand, more detailed ethnographic observation across different social contexts would offer richer insights into how omission patterns relate to identity construction. On the other, expanding the participant pool beyond the present study's limited sample is essential to allow for broader generalizations. This includes incorporating greater gender diversity, particularly AMAB non-binary speakers and binary trans individuals. Another important avenue for future work involves examining how the interview setting may influence participants' linguistic behavior, as factors such as the presence of recording devices or the interviewer's gender could subtly shape speech patterns.

It is crucial for sociolinguistics to consider gender nonconforming identities when analyzing language use, not only because they are a significant part of today's social reality and deserve to be represented in scientific research, but also because they can contribute to a richer understanding of gender performance.

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