Precision and speaker qualities. The social meaning of pragmatic detail.

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Abstract. The present article focuses on two questions: (i) How do listeners infer the social identity of a speaker based on how they choose to describe the world? (ii) Are these inferences informed by similar principles to those motivating the social significance of linguistic phenomena in other domains of the grammar? We address this issue by exploring the social significance of imprecision (Lasersohn 1999): speakers' well-attested tendency to apply varying degrees of deviation from the truth when reporting facts (e.g., describing a car as going 70 MPH, instead of 69). Based on results from a social perception study, we found (i) that a high degree of precision is associated with a constellation of both favorable and unfavorable qualities; (ii) that different linguistic cues to signal precision differentially affect the social meaning of the utterance; (iii) and that most such qualities bear a striking resemblance to those associated to variation in other realms – e.g., the hyper/hypo-articulation of sounds. We take this as evidence that semantic variation can be socially meaningful across the specific lexical items in which it manifests itself, and that such social meanings can be linguistically motivated by similar principles across different domains of the grammar.

1   Introduction: (im)precision, variation, and social meaning

The notion of *social meaning* designates the content that linguistic expressions convey about the social identity of language users (Eckert 2008, 2012) – e.g., their demographic profile, interactional positioning, and social affiliation. Research in sociolinguistics and linguistic anthropology has shown that social meanings, aside from being linked to individual expressions, also associate with broader linguistic phenomena. For example, it has been shown that fully articulated variants of different segments of American English – e.g., /t/, /d/, /ing/, /δ/ – are linked to qualities such as "refinedness", "articulateness", and "education" (Campbell-Kibler 2007, Podesva et al. 2015), as well as with social groups whose identity is informed by such values – e.g., "nerd" (Bucholtz 2001); "teacher" (Eckert 2008); or "competent professional persona" (Podesva 2007). While similar mappings have been extensively discussed with respect to phonological and morpho-syntactic variables (see Eckert 2008 for an overview), only recently have scholars begun to explore the emergence of social meaning with respect to semantic and pragmatic variation. In particular, an emerging strand of research has unveiled how the social content indexed by specific lexical items is crucially grounded in their semantic and pragmatic properties (e.g., demonstratives: Acton & Potts 2014; modals: Glass 2015; intensifiers: Beltrama & Staum Casasanto 2017). The question remains, however, whether the emergence of social meaning can also be linked in a principled fashion to semantic/pragmatic processes as broadly construed, as opposed to idiosyncratic expressions. We

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address this issue through the lens of *imprecision* (Lasersohn 1999): the tendency of speakers to apply fluctuating margins of approximation when reporting events. (1) reports an example in which each sentence describes the fact with a different degree of precision.

(1)   **Fact**: John called at 4:02
    a.   John called at 4.   Lower Precision
    b.   John called at 4:02.   Higher Precision

Extensive work in semantics and philosophy has discussed and modeled this phenomenon from different angles, suggesting that it is acceptable – and in fact desirable – to tolerate minimal deviations from the truth to spare the listener potentially overwhelming details (Pinkal 1995; Krifka 2002, 2009; Kennedy 2007; Sauerland & Stateva 2007; Cobreros et al. 2012; Burnett 2014; Solt 2014; Klecha 2018; Aparicio 2017). A crucial insight emerging from this research is that the ascription of a truth value to a statement depends on where the threshold of accepted deviance is set in the conversation, a parameter that is subject to variation across speakers. From the perspective of social meaning, the presence of wiggle room around the interpretation of linguistic forms plays a crucial role: it creates a space of linguistic variation that can *potentially* become a suitable vehicle to represent and construct differentiation at the level of speaker identity, similar to what has been claimed for variation involved in other linguistic processes (Irvine 2001). The first goal of this investigation is to test if this is the case; that is, if differences in precision are indeed taken to represent distinctions at the level of social meaning. The second goal is to explore how the qualities indexed by (im)precision are related in a principled way to the very notion of pragmatic detail. To explore these issues, we carried out a social perception experiment, testing how the degree of precision of an utterance affects the social qualities that the listener ascribes to the speaker. In Section 2 we report on the study; in Section 3 we proceed to situate these findings in the broader theoretical debate concerning the principles that underlie the connection between linguistic properties and social meanings, with particular attention towards the notions of *markedness* and *iconicity*.

2   The study

2.1   Manipulating precision

The independent variable of the study is the level of precision adopted by a speaker in discourse. To manipulate this variable, we used two different types of linguistic cues, both of which have been claimed to be salient indicators of variation along this value. One cue is Granularity – whether numbers and quantity amounts are expressed in round vs. sharp figures. In particular, it has been observed that round number words such as *one hundred* invite a less precise, more approximate interpretation than number words such as *one hundred and three*, a phenomenon known as the Round Numbers Round Interpretation (RNRI) principle (Krifka 2002, 2009).

    A crucial prediction of this principle is that, all other things being equal, a speaker describing a fact with sharp figures, as in (2b), will come across as more precise than a speaker describing a fact with round figures, as in (2a).

(2)   a.   John arrived at 3.   Approximate
        b.   John arrived at 2:59.   Precise

The second cue of the precision level is Discourse Status –that is, whether the utterance is used to assert a proposition for the first time, or to react to a previously asserted proposition. In particular,

a peculiar property of precision is that it can be dynamically *raised* during the course of interaction by one of the interlocutors (Lewis 1979; Klecha 2018). This is typically done through a variety of linguistic means, including denials such as in (3).

(3)   Alys: John arrived at 3.
        Brienne: No, he arrived at 2:59.   From Klecha (2018): 1

As Klecha suggests, Brienne's utterance makes precision especially salient: not only does it deploy a sharp figure, but it also sets up a contrast with the use of a round number in the previous turn, suggesting that a 1-minute discrepancy between the linguistic descriptor and the worldly facts warrants a correction. The upshot is that the use of a sharp number triggers an even stronger connection to high precision when embedded in a correction than when used to describe a fact for the first time. We created experimental conditions that exclusively varied along these two cues, but were otherwise identical; this would allow us to conclude that observed differences in the perceived social meaning between the conditions are linked to either Granularity or Discourse Status, or a combination of the two.

2.2   Methods

2.2.1   Materials

Our stimuli consisted of written dialogues between two people, called Person A and B. We chose not to use proper names to remain as neutral as possible on the gender identity of the speaker. Each person only participated in one conversational turn; Person B always spoke after Person A and used a number word/quantity amount in their utterance. Expressions of time, amount, and size were used. We crossed our factors, Granularity (Levels: Round vs. Sharp) and Discourse status (Levels: 1st mention vs. Correction), in a 2x2 design. Below is a full item set. 16 items were created in total.

(4)   a.   **Person A**: At what time did John call you?
              Person B: He called at 9   Round, 1st mention
        b.   **Person A**: At what time did John call you?
              Person B: He called at 9.03   Sharp, 1st mention
        c.   **Person A**: John called at 5.
              Person B: No, actually he called at 9.   Round, Corrective
        d.   **Person A**: John called at 9.
              Person B: No, actually he called at 9.03.   Sharp, Corrective

Based on our discussion above, we predict that the level of precision of each condition should be as reported in Table 1.

Table 1: Conditions and precision level

Granularity	Discourse Status	Level of precision
Round	1st mention	Normal
Round	Correction	Normal
Sharp	1st mention	High
Sharp	Correction	Highest

The experimental items were interspersed with fillers also consisting of a dialogue between Person A and Person B, where Person B either responds to Person A's question, or comments on their assertion. In the fillers, no number words were used in the response (all experimental items and fillers are listed in the Appendix). To investigate how variation in precision correlates with differences in social meaning, we ran a *matched guise* task, a design in which listeners' social evaluation of speech is used as a proxy into the social meaning of a form (see Campbell-Kibler 2010). As the first step, we conducted a preliminary study to construct which evaluation scales to use as a dependent variable.[1] Based on the most recurring adjectives in the responses, a total of eight social attributes were selected as salient in connection with precision. Four of such attributes are positively connoted; specifically, they intuitively contribute to projecting a persona with a high degree of respectability (shown in (5)).

(5)   **Positive**: Intelligent, Educated, Hard-working, Articulate

The other four are instead negatively connoted; specifically, they intuitively contribute to projecting a persona with a low degree of social attractiveness (in (6)).

(6)   **Negative**: Uptight, Pedantic, Annoying, Obsessive

2.2.2   Procedure and statistical analysis

The 16 experimental items were distributed in four lists and crossed in a Latin Square Design, so that each item would only appear in one condition in each list. 64 native speakers of English, 16 for each list, participated in the experiment and were paid $2 for completing the study. For a given list, half of the subjects saw the first eight items and half of the subjects the last eight.[2] After seeing each item in writing on the screen, subjects were asked to evaluate Person B on a [1-6] Likert scale along each of the attributes above; they were additionally asked two further questions whose response was not part of the analysis.[3] The presentation of the items was randomized for each participant; as a result, each subject saw the items in a different order. The experiment was designed with the software Qualtrics and subsequently circulated on Amazon Mechanical Turk. For each attribute, a linear mixed effects model was created for each attribute using the lmer function in the lmerTest package in R (Kuznetsova et al. 2017). Each model included random intercepts and slopes for participants and items, and Granularity, Discourse Status and their interaction as fixed effects. In light of the discussion above, we predict that, if the level of precision affects the social perception along the selected attributes, sharp numbers should be associated with higher values on the social scales; and this effect should be stronger when sharp numbers are used in corrections. No

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[1]The pre-study study was designed with the software Qualtrics and subsequently circulated on Amazon Mechanical Turk. 60 subjects, who self-declared to be native speakers of American English and between 18 and 35 years old, were recruited and paid $ 0.50 for participating. Each subject saw two written sentences, one of which contained a sharp and one of which contained a round number. For each sentence, each subject was asked to provide four adjectives to describe the speaker by filling out blank spaces on a computer screen. The subject was then asked to repeat the same task with both sentences simultaneously on the screen.

[2]The first half of the items corresponds to item 1-8; the second half corresponds to items 9-16 in the Appendix.

[3]One question was "What do you think Person B likes to talk about?", with a blank text slot provided for the response; the other question asked "What kind of person do you think Person B might be?". Eight possible choices were provided, each of which represented a specific category of person (e.g., "a businessman", "a nerd", "a Valley Girl"). Such extra questions were included to distract the subjects from the eight Likert scales, as well as to collect exploratory data on the more specific social types associated with precision, a topic that we see as relevant for further research. For discussion on the role of social types in social meaning-based research, see, among others, Podesva (2011); D'Onofrio (2015).

effect, by contrast, should be observed for round numbers. To best assess these effects, we entered Round and 1st Mention as reference levels of the model.

2.3 Positive attributes

Figure 1 shows the plot for the average of the four positive values; Table 2 reports the summary of the mixed effects models.

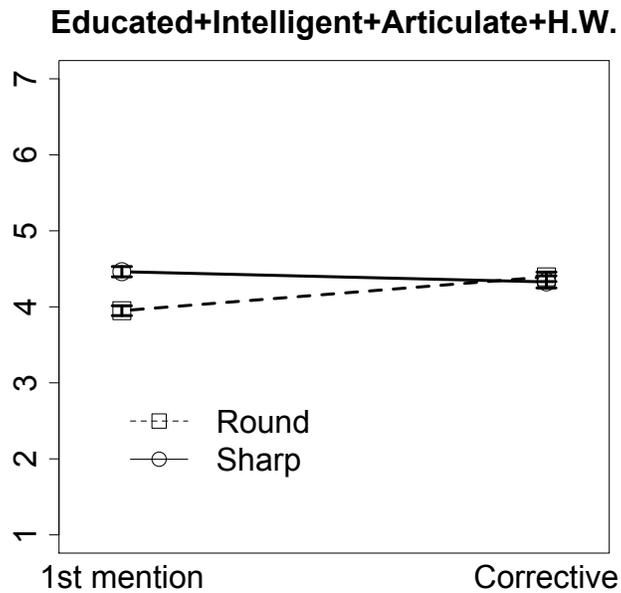Figure 1: Total average scores for positive attributes. Error bars represent standard error.

Educated+Intelligent+Articulate+H.W.

Table 2: Mixed effects model summary for positive attributes. Intercept: Round & 1st mention

Factor	Articulate		H.Work		Intelligent		Educated		Average	
	Coeff.	p	Coeff	p	Coeff.	p	Coeff.	p	Coeff.	p
Intercept	3.86	<.001	3.92	<.0001	4.01	<.001	3.97	<.001	3.94	<.001
Sharp	0.69	<.001	0.30	<.05	0.59	<.001	0.48	<.001	0.52	<.001
Corrective	0.62	<.001	0.32	<.01	.044	<.001	0.41	<.001	0.45	<.001
Sharp:Corr.	–0.64	<.001	–0.52	<.001	–0.70	<.001	–0.46	<.001	–0.58	<.001

For all attributes, the models reveal a main effect of both Granularity and Discourse Status, as well as an interaction between them. We observe that all social dimensions behave very consistently, even though the amplitude of the effects is reduced for "Hard Working" in comparison to the other qualities. To better understand such effects, we carried out post-hoc comparisons with a Tukey correction for multiple comparisons on the average of all values. The analysis supports the following observations: (i) speakers using Sharp numbers for the first time were rated more highly than speakers using Round numbers for the first time (t(83.02) = 5.5, $p < 0.001$); (ii) speakers using Round numbers in Corrections were rated more highly than speakers using Round numbers for the first time (t(22.57)=5.4, $p < 0.001$); (iii) no difference is found between speakers using Round

vs. Sharp numbers in Corrections (t(25.02) = .7, p = 0.85); (iv) no difference is observed between speakers using Sharp numbers in Corrections vs. for the first time (t(22.79)=1.6, p = 0.38).

2.4 Negative attributes

Figure 2 shows the plot for the average of the four negatively connotated values, while Table 3 reports the summary of the mixed effects models.

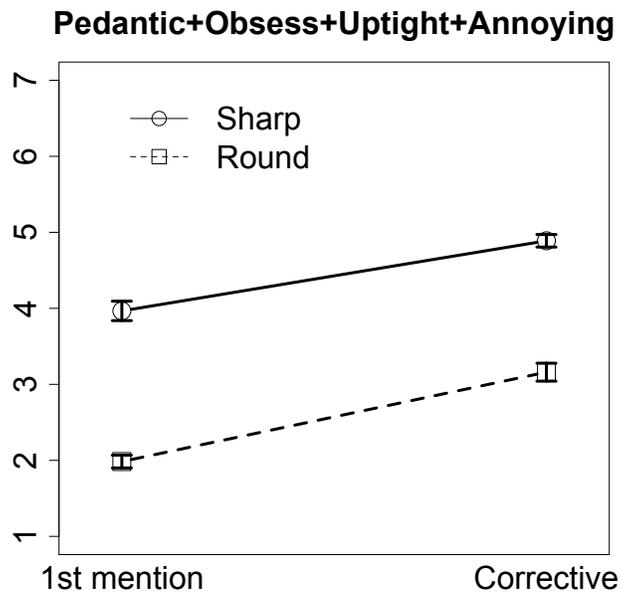Figure 2: Total average scores for negative attributes. Error bars represent standard error.

Table 3: Mixed effects model summary for negative attributes. Intercept: Round & 1st mention

Factor	Obsessive		Pedantic		Uptight		Annoying		Average	
	Coeff.	p	Coeff	p	Coeff.	p	Coeff.	p	Coeff.	p
Intercept	2.00	<.001	2.10	<.001	1.89	<.01	1.91	<.001	1.98	<.001
Sharp	2.39	<.001	1.77	<.001	2.13	<.01	1.64	<.001	1.98	<.001
Corrective	1.17	<.001	1.11	<.001	1.30	<.05	1.08	<.001	1.17	<.001
Sharp:Corr.	−0.56	<.001	−0.30	−	−0.30	−	0.2	−	−0.26	−

Again, we observe that all social dimensions behave very consistently. For all attributes, the models reveal a main effect of both Granularity and Discourse Status. However, contrary to what we observed for the Positive attributes, no interaction is found, except for "Obsessive". Post-hoc comparisons with a Tukey correction for multiple comparisons support the following observations: (i) speakers using Sharp numbers for the first time were associated with higher values than speakers using Round numbers for the first time (t(41.67) = 11.3, p < 0.001); (ii) speakers using Round numbers in Corrections were associated with higher values than speakers using Round numbers for the first time (t(11.79)=7.18, p < 0.001); (iii) speakers using Sharp numbers in Corrections were associated with higher values than speakers using Round numbers in Corrections (t(41.30) = 9.81,

$p < 0.001$); (iv) speakers using Sharp numbers in Corrections were associated with higher values than speakers using Sharp numbers for the first time ($t(11.91) = 6.06$, $p < 0.001$).

2.5 Ordering effects

Finally, we carried out a post-hoc analysis to check for possible order effects due to participants inferring the logic of the task in the course of the experiment and adjusting their responses accordingly. First, we coded each datapoint for when it occurred in the experiment (*Half 1* vs *Half 2*). To check if the responses were affected by the order of presentation, we constructed a mixed effects model for each attribute adding the factor "Half" to the fixed effects of the model discussed above. In addition, we carried out comparisons for all conditions comparing the averages from each half. Both the models and the comparisons failed to show significant effects.[4]

3 General Discussion

We now discuss how the experimental findings speak to the two questions motivating this study. First, are distinctions in precision associated with distinctions in social meaning (Section 3.1)? Second, if this is indeed the case, what linguistic principles underlie this association (Section 3.2)?

3.1 The social meaning of (im)precision

Authors of precise statements are rated higher in articulateness, intelligence and education; they are also perceived as more annoying, obsessive, pedantic and uptight than authors of more approximate statements. This suggests that variation in pragmatic detail carries a cohesive indexical core across the specific lexical items in which it manifests itself, pointing to (im)precision as a fertile domain for the emergence of social meanings. Moreover, this set of values is not homogeneous; rather, it embeds qualities that, similarly to many other variables discussed in the literature, reflect different stances towards the speaker. Language attitude studies, for example, showed that standard varieties are similarly rated high on scales related to respect and authority and low on measures of social attractiveness (Lambert et al. 1960; Ryan & Carranza 1975; Woolard 1984; Campbell-Kibler 2006). Concerning individual variables, to name a few examples, users of the velar and alveolar variants of /ing/ (i.e., [ŋ] vs. [n]) are perceived as articulate and pretentious and as uneducated and laid-back (Campbell-Kibler 2007) respectively; negative concord, normally seen as indexing lack of education and institutional alienation, can take on positive values such as street-savviness and toughness (Eckert 2000); and the affective proximity indexed by demonstratives can be perceived as "warm and genuine" or as " disingenuous and untoward" (Acton & Potts 2014).

Crucially, the co-existence of these evaluative stances is predicted by current accounts of indexicality, and specifically by the idea that speaker qualities are clustered in constellations of *potential* meanings – chains of ideologically related values, any one of which can be activated in the situated use of a speech form (Eckert 2008, for further discussion, see Section 3.2). From this perspective, then, (im)precision appears to be no exception: its perception is open to (sometimes radically) different evaluations, which are likely grounded in different ideological positions of the listener. Also unsurprising is the fact that positive and negative qualities are strongly correlated with one another within the respective category. As shown by the results of a correlation analysis (see Table 5, Appendix B), listeners treated positively and negatively connotated traits homogeneously: if they rated

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[4]See Tables 6-9 in Appendix B for a full report of the results. We're grateful to an anonymous reviewer for drawing our attention to this important aspect of the experimental procedure.

the speaker high or low on one dimension, they tended to rate them similarly along the remaining dimensions of the cluster, consistent with what has been extensively observed in language attitude studies (see Newman et al. 2008 in particular). At the same time, no negative correlation is found between positive and negative values, suggesting that perceiving a precise speaker as highly educated or articulate does not exclude perceiving them as annoying or pedantic; and that perceiving them as uneducated or inarticulate is consistent with perceiving them as socially attractive. What remains to be seen is which factors condition the activation of favorable vs. unfavorable traits in connection to precise statements. Previous work has shown that such evaluations are not merely contingent on the ideological perspective of the hearer, but also on the style in which the relevant speech form is embedded. For example, Campbell-Kibler (2007) shows that velar realizations of /ing/ tend to be perceived more negatively when they are inconsistent with contextual expectations about the social identity of the speaker – e.g., in contexts in which the speaker is independently known to be uneducated, and thus sounds pretentious or insincere when using an incongruent variant. Similar manipulations can be implemented in further work to investigate if the same logic is at work with precision.

It is important to note, finally, that the social perception of positive vs. negative qualities is differentially affected by Granularity and Discourse Position, the two experimental factors that we manipulated as independent variables. With negative attributes, the ratings of corrections involving sharp numbers amount to the linear combination of the effects contributed by corrections and sharpness separately. With positive attributes, instead, the two factors interact: while corrections and sharp numbers independently lead to higher ratings, their effect does not combine when correction and sharpness co-occur. Two elements could be responsible for this pattern. First, it might be the case that precision indexes favorable qualities only on the condition that the speaker maintains a cooperative behavior in the conversation. Since the act of challenging the speaker on the grounds of negligible informational detail is instead "mildy uncooperative" (Klecha 2018: 4), it might induce a penalty in the social evaluation, which offsets the positive value of precision; by the same token, because lack of pragmatic cooperativeness is instead conducive to ascribing unfavorable qualities to the speaker, sharpness and corrections add onto one another for the negative values. Second, the presence of the word *actually* in the corrective condition may be contributing to the participants' perceptions over and above precision. While this lexical item was used to ensure that corrective utterances would be as natural as possible, it might also contribute an independent social meaning – most likely, one that is highly gendered and possibly age-related – and could have driven some of the evaluations emerging in the experiment.[5] We leave the investigation of how the social effects linked to the use of this adverb can be teased apart from those linked to precision proper for further research.

3.2   Exploring the link: from pragmatic reasoning to iconicity

The other issue central to our study concerns the linguistic factors informing the social qualities of (im)precision. More specifically: what principle(s) motivate(s) the link between the evaluation patterns found in the experiment and variation in pragmatic detail? We suggest that two elements are especially important to consider: pragmatic reasoning and iconicity.

As a first step, we would like to consider the idea that the social value of (im)precision is linked to the speaker-listener reasoning that language users embark upon when encountering quantity expressions. The role of pragmatic reasoning has been extensively discussed in previous work

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[5]We are thankful to an anonymous reviewer for bringing this point to our attention, as well as for providing the well-known joke "Where do mansplainers get their water? A well, actually..." as supporting evidence.

concerned with the social meaning of pragmatic variables. For instance, Acton and Potts (2014) argued that the affective convergence and solidarity indexed by demonstratives originates from the (semantic) presupposition that the addressee must be able to access the speaker's position in the discourse context. But this effect is crucially made salient by the underlying competition with simpler, referentially equivalent expressions that could have occurred in the same slot – e.g., *the*.

(7) a. The American workforce is the greatest in <u>this</u> world.   Acton & Potts (2014): 9
     b. The American workforce is the greatest in <u>the</u> world.

Given the availability of a less complex alternative, the addressee of (7b) is sent on a pragmatic hunt to determine why the speaker "went out of their way" to use a demonstrative, which leads to the inference that the speaker intended to emphasize the belief that the addressee is capable of addressing their perspective.[6] This, in turn, strengthens the perspective-sharing effect, foregrounding the social meaning indexed by the demonstrative. *Mutatis mutandis*, a similar competition seems to be involved in the interpretation of numerical expressions. In particular, given our ability to apply a margin of tolerance to the literal meaning of a linguistic form, the decision to describe an event using a sharp number could thus raise the issue as to why the speaker resorted to a more complex and cognitively costly strategy, leading the listener to conclude that the speaker intended to emphasize the unusually high degree of pragmatic detail of their utterance. This could then serve as a starting point to draw social inferences about the speaker's identity. Specifically, thinking about why the speaker chose to adhere to a heightened standard of precision could invite the listener to make specific ideological assumptions about the kind of person the speaker may be; and this, in turn, would start the chain of n-th order elaborations that leads to the constellation of meanings that typically constitute the socio-indexical value of a linguistic form (Silverstein 2003; Eckert 2008). If this is on the right track, (im)precision would provide yet another example of how marked variants are more apt to be noticed and assigned social meaning than unmarked ones, a generalization that has been suggested to hold across different domains of variation (Wolfram 1969; Bender 2000; Campbell-Kibler 2006; Podesva 2011; Callier 2013; Acton & Potts 2014 among others).

However, while pragmatic reasoning could serve as a language-internal mechanism that fuels the ascribing of the social qualities observed in the experiment, the question remains open as to how the notion of precision informs the ideological steps that lead to the emergence of these traits, as opposed to others. In other words, is there a principled connection between precision and high ratings in intelligence and uptightness, as opposed to, for instance, coolness or friendliness? As a suggestive proposal, we would like to point out the parallel between (im)precision and (hyper/hypo)articulation, a phonological process that relies on similar pressures in order to simplify details to facilitate communication, and which has been shown to convey a consistent core of social meanings across different variables (Campbell-Kibler 2007; Eckert 2012; Podesva et al. 2015). We note two important similarities shared by these phenomena. First, they are both based on a similar pressure to suppress *details* – both in the domains of sound production and world description – which is followed to varying degrees by speakers. Second, they index remarkably similar speaker qualities, suggesting a picture in which these are linked in a principled fashion to the notion of detail-orientedness, or a lack thereof. In the case of articulation, this connection has been discussed by some authors in terms of an *iconic* mapping between articulatory effortfulness and thoroughness, whereby speakers showing detail-orientedness in the way in which they pronounce sounds are reanalyzed as embodying detail-orientedness as part of their identity (Eckert 2012; Podesva

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[6]The idea that marked forms tend to be assigned more specific meanings and functions than their unmarked, referentially equivalent counterparts can be traced back to the theory of the *division of pragmatic labor* (Horn 1984).

et al. 2015). Similarly, Bucholtz (2001) suggests an iconic link between resisting the phonological pressure to simplify the realization of a phoneme and the practice of resisting assimilation to the crowd, a distinctive feature of particular social groups (e.g., nerds). This raises the question as to whether the social perception of numerical expressions could be driven by a similar semiotic process – one whereby listeners interpret informational thoroughness as a transparent reflection of the speakers' permanent identity traits. While we leave a full exploration of this hypothesis for further research, we envision two ways in which the qualities discussed above could be iconically linked to pragmatic detail. First, a speaker describing a fact with a sharp number significantly reduces the indeterminacy surrounding the interpretation of the statement. While round numbers can be associated with an array of different values, sharp numbers are univocally associated with their strict denotation; therefore, they project an image of the speaker as an agent committed to producing a non-ambiguous, carefully crafted message, similar to someone providing a clear phonetic rendition of a phoneme. Second, using a sharp number entails working with considerably more informational detail: the speaker has to perform a longer, more complex utterance than the utterance containing the corresponding round number, while the listener has to keep track of a more fine-grained, hence more costly, representation of information (Krifka 2002, 2009). If this is on the right track, it could also help us understand why the same values are associated with corrective utterances, even when these involve round numbers. A speaker intent on correcting the interlocutor could also be a speaker that is highly committed to truth, and thus ready to undertake the necessary course of action to ensure that language is used with descriptive adequacy. This link could be further reinforced by the fact that objections are known to be pragmatically costly: while accepting the asserted proposition is the default, unmarked reaction to an interlocutor's assertion, disputing the move puts the conversation in a state of *crisis*, and requires extra work on the part of the interlocutors to be sorted out (see Farkas & Kim 2010 for details). Taken together, these elements conspire to foreground notions such as effortfulness and thoroughness, whose iconic potential has been well documented for other linguistic processes, and could thus be playing an equally important role for our case study. While this could be a promising first step to explore the semiotic link between precision and its indexical values, it is important to keep in mind that iconic relations do not exist in a vacuum; quite the contrary, they are always embedded in an ideological framework within which similarity comes to be socially recognized (Irvine & Gal 2000). Accordingly, crucial issues to explore in further research include how the cultural representation of quantitative values – e.g., times, amounts, distance – contributes to the perceived resemblance between pragmatic detail and social qualities; and how the evaluation of precision within a community intersects with the understanding of related concepts like truth, falsity and accuracy.

4 Conclusion

We have shown that listeners rely on variation in pragmatic precision as a cue to ascribe social qualities to their interlocutor; moreover, we have suggested that social meanings associated with precise vs. imprecise statements might be accounted for with similar motivations to those claimed to inform the emergence of social meanings in other areas of the grammar. While a number of issues remain open for further investigation, these results highlight the importance of integrating semantic, pragmatic and social perspectives on the study of meaning, so as to reach a more comprehensive understanding of the dynamics whereby humans convey and perceive different types of content when engaging in communication.

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Appendix A: Experimental Stimuli

Experimental Items:

1. (a) **Person A**: At what time did John call you? **Person B**: He called at 9.03.

   (b) **Person A**: At what time did John call you? **Person B**: He called at 9.

   (c) **Person A**: John called at 9. **Person B**: No, actually he called at 9.03.

   (d) **Person A**: John called at 3. **Person B**: No, actually he called at 9.

2. (a) **Person A**: How far is the closest gas station from here? **Person B**: It's 11.9 miles down the highway.

   (b) **Person A**: How far is the closest gas station from here? **Person B**: It's 10 miles down the highway.

   (c) **Person A**: The next gas station is 12 miles down the highway. **Person B**: No, actually it's 11.9 miles down the highway.

   (d) **Person A**: The next gas station is 30 miles down the highway. **Person B**: No, actually it's 10 miles down the highway.

3. (a) **Person A**: How long does it take to walk from your house to the closest ice-cream shop? **Person B**: It takes 9 minutes and 30 seconds to get there.

   (b) **Person A**: How long does it take to walk from your house to the closest ice-cream shop? **Person B**: It takes 10 minutes to get there.

   (c) **Person A**: The closest ice-cream shop is 10 minutes away. **Person B**: No, actually it takes 9 minutes and 30 seconds to get there.

   (d) **Person A**: The closest ice-cream shop is 40 minutes away. **Person B**: No, actually it takes 10 minutes to get there.

4. (a) **Person A**: What time did they deliver the package? **Person B**: They delivered it at 8.02 am.

   (b) **Person A**: What time did they deliver the package? **Person B**: They delivered it at 8 am.

   (c) **Person A**: They delivered the package at 8 am. **Person B**: No, actually they delivered it at 8.02.

   (d) **Person A**: They delivered the package at noon. **Person B**: No, actually they delivered it at 8 am.

5. (a) **Person A**: How many people live in this town? **Person B**: The population is 14,932.

   (b) **Person A**: How many people live in this town? **Person B**: The population is 15 thousand.

   (c) **Person A**: This town has a population of 15 thousand. **Person B**: No, actually the population is 14,932.

   (d) **Person A**: This town has a population of 25 thousand. **Person B**: No, actually the population is 15 thousand.

6. (a) **Person A**: How far are we from the next town? **Person B**: It's 6.9 miles from here.

(b) **Person A**: How far are we from the next town? **Person B**: It's 7 miles from here.

(c) **Person A**: The next town is 7 miles from here. **Person B**: No, actually it's 6.9 miles from here.

(d) **Person A**: The next town is 25 miles from here. **Person B**: No, actually it's 7 miles from here.

7. (a) **Person A**: What time did Mary get home last night? **Person B**: She came home at 10.33 pm.

(b) **Person A**: What time did Mary get home last night? **Person B**: She came home at 10.30 pm.

(c) **Person A**: Yesterday Mary got home at 10.30 pm. **Person B**: No, actually she came home at 10.33 pm.

(d) **Person A**: Yesterday Mary got home after midnight last night. **Person B**: No, actually she came home at 10.30 pm.

8. (a) **Person A**: How long was the trip to get here? **Person B**: It was 3 hours and 58 minutes.

(b) **Person A**: How long was the trip to get here? **Person B**: It was 4 hours.

(c) **Person A**: The trip to get here was 4 hours. **Person B**: No, actually it was 3 hours and 58 minutes.

(d) **Person A**: The trip to get here was 6 hours. **Person B**: No, actually it was 4 hours.

9. (a) **Person A**: How far from home were we when you when the car broke down? **Person B**: We were 19.8 miles away.

(b) **Person A**: How far from home were we when you when the car broke down? **Person B**: We were 20 miles away.

(c) **Person A**: We were 20 miles away from home when the car broke down. **Person B**: No, actually we were 19.8 miles away.

(d) **Person A**: We were 40 miles away from home when the car broke down. **Person B**: No, actually we were 20 miles away.

10. (a) **Person A**: When did your parents arrive in town? **Person B**: They got here at 9.04.

(b) **Person A**: When did your parents arrive in town? **Person B**: They got here at 9.

(c) **Person A**: My parents got to our place at 9. **Person B**: No, actually they got here at 9.04.

(d) **Person A**: My parents got to our place at 5. **Person B**: No, actually they got here at 9.

11. (a) **Person A**: How long did it take to get home from the game? **Person B**: It took us 22 minutes and 20 seconds.

(b) **Person A**: How long did it take to get home from the game? **Person B**: It took us 20 minutes.

(c) **Person A**: It took us 20 minutes to get home from the game. **Person B**: No, actually it took us 22 minutes and 20 seconds.

(d) **Person A**: It took us 40 minutes to get home from the game. **Person B**: No, actually it took us 20 minutes.

12. (a) **Person A**: When did you go for lunch? **Person B**: We went at 12.01.

   (b) **Person A**: When did you go for lunch? **Person B**: We went at 12.

   (c) **Person A**: We went for lunch at noon yesterday. **Person B**: No, actually we went at 12.01.

   (d) **Person A**: We went for lunch at 3 yesterday. **Person B**: No, actually we went at 12.

13. (a) **Person A**: What quantity of mushroom did John bring in? **Person B**: He brought 1.95 pounds.

   (b) **Person A**: What quantity of mushroom did John bring in? **Person B**: He brought 2 pounds.

   (c) **Person A**: John brought in 2 pounds of fresh mushrooms today. **Person B**: No, actually he brought 1.95 pounds.

   (d) **Person A**: John brought in 4 pounds of fresh mushrooms today. **Person B**: No, actually he brought 2 pounds.

14. (a) **Person A**: How long did it take you to find a parking spot? **Person B**: It took us 9 minutes and 40 seconds.

   (b) **Person A**: How long did it take you to find a parking spot? **Person B**: It took us 10 minutes.

   (c) **Person A**: It took us 10 minutes to find a parking spot. **Person B**: No, actually it took us 9 minutes and 40 seconds.

   (d) **Person A**: It took us 30 minutes to find a parking spot. **Person B**: No, actually it took us 10 minutes.

15. (a) **Person A**: When did the show begin? **Person B**: It began at 8:31.

   (b) **Person A**: When did the show begin? **Person B**: It began at 8:30.

   (c) **Person A**: The show began at 8:30. **Person B**: No, actually it began at 8:31.

   (d) **Person A**: The show began at 10:30. **Person B**: No, actually it began at 8:30.

16. (a) **Person A**: How old is the building in front of the town hall? **Person B**: It's 39 years, 8 months and 20 days old.

   (b) **Person A**: How old is the building in front of the town hall? **Person B**: It's 40 years old.

   (c) **Person A**: The building in front of the town hall is 40 years old. **Person B**: No, actually it's 39 years, 8 months and 20 days old.

   (d) **Person A**: The building in front of the town hall is 70 years old. **Person B**: No, actually it's 40 years old.

Fillers:

1. **Person A**: Dana is getting married!
   Person B: Oh, I didn't know. That's great!

2. **Person A**: Where can I take the train that goes to the airport?
   Person B: You can take it from the main station.

3. **Person A**: John was born in 1987.
   Person B: Oh, I thought he was much younger.

4. **Person A**: Where is Michael's graduation party?
   Person B: He's hosting it in his apartment.

5. **Person A**: Who decided to shut down the movie theater in town?
   Person B: I think it was the mayor.

6. **Person A**: Jessica is pregnant!
   Person B: Oh, very good news!

7. **Person A**: Is it true that that Claudia and Steph are together?
   Person B: I think they are just dating casually!

8. **Person A**: Where is the closest ATM?
   Person B: It's just around the corner.

Appendix B: Statistical summary

Table 4: Average scores and standard deviation for all attributes

	R-1st		S-1st		R-C		S-C	
Attribute	Avg	SD	Avg	SD	Avg	SD	Avg	SD
Articulate	3.86	0.96	4.55	O.97	4.48	0.89	4.53	1.02
H. Working	3.93	0.81	4.23	0.88	4.25	0.81	4.03	1.06
Intelligent	4.01	0.84	4.60	0.87	4.46	0.73	4.34	1.11
Educated	3.97	0.85	4.45	0.90	4.38	0.88	4.40	0.99
Avg. Pos.	3.95	0.73	4.53	0.75	4.44	0.70	4.42	0.90
Uptight	1.89	1.06	4.03	1.62	3.19	1.54	5.02	1.24
Pedantic	2.10	1.26	3.88	1.65	3.26	1.41	4.66	1.52
Annoying	1.92	1.16	3.54	1.62	3.00	1.49	4.85	1.16
Obsessive	2.00	1.03	4.39	1.63	3.17	1.58	4.00	1.28
Avg. Neg.	1.98	0.94	3.96	1.43	3.16	0.93	4.88	1.33

Table 5: Correlation Matrix for all attributes

–	Art	Int	Edu	HW	Pos	Upt	Ped	Ann	Obs	Neg
Art	1.00	0.63	0.69	0.56	0.86	0.22	0.18	0.05	0.20	0.19
Int	0.63	1.00	0.67	0.61	0.86	0.12	0.11	0.00	0.18	0.12
Edu	0.69	0.67	1.00	0.57	0.86	0.20	0.15	0.03	0.15	0.15
HW	0.56	0.61	0.57	1.00	0.80	0.11	0.14	–0.01	0.10	0.09
Pos	0.86	0.86	0.86	0.80	1.00	0.19	0.17	0.02	0.19	0.16
Upt	0.22	0.12	0.20	0.11	0.19	1.00	0.75	0.80	0.79	0.93
Ped	0.18	0.11	0.15	0.14	0.17	0.75	1.00	0.68	0.69	0.87
Ann	0.05	0.00	0.03	–0.01	0.02	0.80	0.68	1.00	0.72	0.89
Obs	0.20	0.18	0.15	0.10	0.19	0.79	0.69	0.72	1.00	0.89
Neg	0.19	0.12	0.15	0.09	0.16	0.93	0.87	0.89	0.89	1.00

Table 6: 1st vs 2nd half mixed-effect model summary for Positive attributes. Effect of **Half** and related interactions in boldface.

Factor	Articulate		H.Work		Intelligent		Educated		Average	
	Coeff.	p	Coeff	p	Coeff.	p	Coeff.	p	Coeff.	p
Intercept	3.86	<.001	3.92	<.0001	4.01	<.001	3.97	<.001	3.94	<.001
Sharp	0.69	<.001	0.30	<.05	0.59	<.001	0.48	<.001	0.54	<.001
Corrective	0.62	<.001	0.32	<.01	.044	<.001	0.41	<.001	0.45	<.001
2Half	**–0.04**	**.710**	**0.04**	**.823**	**–0.03**	**.809**	**–0.09**	**.543**	**–0.02**	**.877**
2Half:Sharp	**–0.03**	**.841**	**–0.06**	**.687**	**–0.19**	**.238**	**0.07**	**.656**	**–0.31**	**.754**
2Half:Corr.	**0.00**	**.964**	**–0.02**	**.893**	**–0.03**	**.840**	**0.10**	**.490**	**–0.04**	**.971**
2H:Sh:Co.	**–0.10**	**.671**	**-0.03**	**.893**	**0.30**	**.188**	**0.10**	**.632**	**–.10**	**.917**

Table 7: 1st vs 2nd half mixed-effect model summary for Negative attributes. Effect of **Half** and related interactions in boldface.

Factor	Obsessive		Pedantic		Uptight		Annoying		Average	
	Coeff.	p	Coeff	p	Coeff.	p	Coeff.	p	Coeff.	p
Intercept	2.00	<.001	2.10	<.001	1.89	<.01	1.91	<.001	1.98	<.001
Sharp	2.39	<.001	1.77	<.001	2.13	<.01	1.64	<.001	1.98	<.001
Corrective	1.17	<.001	1.11	<.001	1.30	<.05	1.08	<.001	1.17	<.001
2Half	**0.10**	**.619**	**0.02**	**.902**	**0.03**	**.875**	**–0.03**	**.857**	**0.04**	**.767**
2Half:Sharp	**0.17**	**.485**	**0.11**	**.628**	**0.21**	**.364**	**0.06**	**.791**	**0.14**	**.452**
2Half:Corr.	**–0.38**	**.129**	**0.16**	**.626**	**–0.33**	**.163**	**–0.15**	**.508**	**–0.33**	**.078**
2H:Sh:Co.	**0.18**	**.604**	**0.16**	**.626**	**0.08**	**.809**	**–0.03**	**.927**	**0.09**	**.730**

Table 8: Comparison between conditions for Negative attributes: 1st Half vs 2nd Half.

Contrast	Articulate		H.Work		Intelligent		Educated		Average	
	t.ratio	p	t.ratio	p	t.ratio	p	t.ratio.	p	t.ratio	p
Sh,1st men	1.49	.798	0.37	1.00	2.04	.45	0.12	1.00	0.44	.99
Sh, Corr.	0.26	1.00	0.99	.97	0.16	1.00	0.01	1.00	0.14	1.00
Rd, 1st men	0.24	1.00	0.09	1.00	0.62	.99	0.22	1.00	0.16	1.00
Rd, Corr.	0.45	1.00	0.43	.99	0.08	1.00	0.11	1.00	0.29	1.00

Table 9: Comparison between conditions for Negative attributes: 1st Half vs 2nd Half.

Contrast	Obsessive		Pedantic		Uptight		Annoying		Average	
	t.ratio	p	t.ratio	p	t.ratio	p	t.ratio.	p	t.ratio	p
Sh,1st men	1.31	.88	0.74	.99	1.10	.94	0.54	.99	1.16	.93
Sh, Corr.	1.22	.90	1.05	.96	0.01	1.00	0.54	.99	0.30	1.00
Rd, 1st men	0.50	.99	0.12	1.00	0.16	1.00	0.19	1.00	0.30	1.00
Rd, Corr.	0.39	1.00	2.55	.20	1.20	.88	0.72	.99	1.70	.66