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Variation, gender and perception: the social meaning of Japanese linguistic variables

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Abstract: The social categories that characterize a speaker frequently correlate with the use of specific linguistic variables. Research suggests that such correlations are sometimes recognized as socially-indexed meanings. This study examines Japanese individuals' attitudes toward variables that have been shown to correlate with the social category of gender in production. In particular, we contrast patterns of gendered variation that (i) have been prescriptively associated with speaker sex and (ii) tend to correlate with gender in speech production but are outside of the set of prescriptive "women's language". We found that individuals have formed associations between the gender of the speaker and prescriptive variables but not other patterns of variation. Additionally, knowledge of the speech context of the variables had no significant effect on individuals' judgments. The results indicate that not all social information available from patterns of language use is recovered by listeners. More broadly, examining the transmission of social meaning through linguistic variation requires a combination of production- and perception-based research methods.

Keywords: gender; Japanese; perception; social meaning; variation

1 Introduction

One of the fundamental goals of sociolinguistic inquiry is to understand speakers' motivations to use one linguistic variant over another. Recent work in sociolinguistics,

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referred to as third wave research (Eckert 2005), has, in particular, explored this question by focusing on social meaning as a force that motivates speakers to use certain linguistic variants (Agha 2003, 2007; Campbell-Kibler 2007, 2008, 2009, 2011; Johnstone and Kiesling 2008; Levon 2011; Moore 2004; Moore and Podesva 2009; Podesva 2007, 2011a, 2011b; Podesva et al. 2015; Zhang 2005, 2007, 2008). Podesva et al. (2015: 60) summarizes this development succinctly, "third wave studies shift their focus from linguistic change to the social meanings that motivate speakers to use one linguistic variant over another." Contrary to earlier work in sociolinguistics, coined first and second wave research, which examines the relationship between linguistic variation and social, or demographic, categories on both major and local scales, respectively, third wave researchers suggest that variables are available for speakers to use as a resource to construct identities, stances and personas. This claim builds upon the work of Silverstein (1976), who argued that associated social categories are indexed by variables to form meaning which is significant to some speakers, particularly those involved in a communicative event. For example, the released variant of word-final /t/ occurs at high rates among Orthodox Jewish men (Benor 2001, 2004). Benor concluded that stop releases not only indexed learnedness but that, in the examined cultural context, learnedness indirectly indexed masculinity. Therefore, in order to sound like a learned man, the third wave expectation is that Orthodox Jewish boys would release their word-final /t/s. In the present study, we sought to further this line of inquiry into social meaning by examining individuals' attitudes towards Japanese linguistic variables that have been previously shown to vary with speaker sex in production. Ultimately, we argue on the basis of two experimental results that the correlation of a linguistic form with a social category is a necessary but not sufficient condition for social indexation.

The ability of speakers to use socially indexed meaning to construct identities, stances and personas rests on two foundations. The first is that social meaning must be indexed by the variable, such that the choice of the form hints at the social category of the speaker in addition to any other semantic contributions (e.g., context-free truth-conditional meaning). The second is that individuals are aware of the indexed social meaning. In order for the variable to be used for the purpose of identity, personae or stance construction, within a community, the social meaning of the variable must be shared knowledge. If individuals are not aware of the indexed meaning, they could still produce the form as a result of imitative social conditioning, but the intended social information would be unstable. For example, quotative *like* in English has been shown to correlate with the social categories of gender, age and socioeconomic status (Dailey-O'Cain 2000). If these categories have been indexed onto the variable in addition to its quotative meaning, it would imply that individuals are aware of this additional meaning, either as unconscious or conscious knowledge. Should the knowledge be overt and

conscious to the individual, it would be possible for speakers to be able to use *like* to construct specific identities in relation to the indexed social meaning. Such sociolinguistic performance is not possible if individuals are unaware of the indexed meaning. Buchstaller (2006) shows the social categories of age and gender amongst British listeners to be identifiable from quotative *like* use. This finding suggests that British individuals used *like* to construct identities in relation to age and gender but not in relation to socioeconomic status which was not found to be indexed onto the variable, at least in an overt manner.

The first wave studies (Labov 1966a; Trudgill 1974; Wolfram 1969) that examined the systematicity of socially conditioned variation across major demographic categories, and the second wave studies (Eckert 2000; Milroy 1980; Rickford 1986) that focused on the relationship between variation and local, participant-designed categories, have shown consistently and reliably that variables correlate with social categories in production. It is this finding from production-based studies that has been used to support the third wave line of inquiry investigating the possibility that variables can index social meaning. Specifically, correlations in practice are suggested to reflect the recruitment of variables for the communication of social meaning. The logic of this claim rests on the process of indexicalization (Eckert 2008; Silverstein 1976, 2003), where meaning is indexed through the correlation between a signifier and the signified in space and time. Forms are capable of indexing additional meanings, further to semantic meaning or first-order meanings, leading to what Eckert (2008: 454) describes as "a field of potential meanings—an *indexical field*, or constellation of ideologically related meanings, any one of which can be activated in the situated use of the variable." Third wave variationists thus suggest that the social meaning(s) of linguistic variables are fluid and flexible, and their interpretation depends on the situational context.

The process of indexicalization is in line with usage-based approaches to language learning. Exemplar models are one such usage-based approach which assumes that individual speech utterances are aggregated in memory as exemplar representations that contain rich linguistic and non-linguistic information (Bybee 2001; Foulkes and Docherty 2006; Goldinger 1997, 1998; Johnson 1997, 2006; Pierrehumbert 2001, 2002). This aggregation results in a mapping of relevant social categories, pertaining to the speaker, to each exemplar (Drager 2005; Foulkes and Docherty 2006; Hay et al. 2006a, 2006b; Johnson et al. 1999). Research has shown that once an exemplar representation is stored in an individual's memory it can be activated during both the production and perception of speech (Hay et al. 2006a, 2006b; Johnson 1997; Lozito and Mulligan 2010; Pierrehumbert 2001). According to exemplar theory, speakers are thus able to produce forms that index correlating social categories and perceive the social categories that are indexed onto the representations. Using the example above, exposure to an Orthodox Jewish learned man's patterns of

released /t/ would be expected to create a mental representation of released /t/ and its associated social categories: namely, religion, education and gender. A speaker can then use this feature as a stylistic device to create a particular social persona. This is only effective, however, if the feature and its associated categories are recognized as an index of this social persona. Consequently, should this knowledge be overtly perceivable, we would expect individuals to be able to retrieve the social information that correlates with linguistic variables within a given speech community.

Regional dialect labeling experiments have provided evidence that demonstrates individuals' overt awareness of correlating social categories that are indexed onto variables (Baker et al. 2009; Cramer 2010; Fuchs 2015; Kirtley 2011; Purnell et al. 1999; Suárez-Budenbender 2009). Clopper and Pisoni (2004) examined Indiana college students' ability to accurately categorize six North American regional dialects. They found that while the listeners' general identification accuracy was low, their responses were statistically above chance. Moreover, speakers who had lived in at least three different states were more accurate than those who had only lived in Indiana. Speakers who had lived in a given region also categorized talkers from that region more accurately than speakers who had not lived there. This finding was in line with exemplar theory expectations, suggesting that listener experience is an important factor in identifying a speaker's region based on linguistic variables.

Social evaluation studies have also shown that listeners are able to identify socially indexed meanings from linguistic variables. Campbell-Kibler (2007, 2008, 2011) examined the effects of the sociolinguistic variable (ING) (e.g., *walkin'* vs. *walking*) on listeners' attitudes toward speakers. Manipulating the realization of the final nasals in (ING) influenced listeners' judgments about the speaker. Specifically, however, the results differed from previous studies that examined the social stratification of (ING). Previous studies found that, in addition to the associated social categories identified in Campbell-Kibler's research, the social categories of gender, socioeconomic status, dialect, age and race were also shown to correlate with (ING) (Fischer 1958; Labov 1966a, 1966b; Shopen 1978; Shuy et al. 1968; Trudgill 1974). The asymmetry between patterns in production and patterns in individuals' awareness has also been identified for other linguistic variables including *t/d* deletion in English (Baugh 1979; Campbell-Kibler 2006; Guy and Boyd 1990; Labov 1972a; Rickford 1999; Staum Casasanto 2010; Wolfram 1969); quotative and focuser *like* (Buchstaller 2006; Dailey-O'Cain 2000), fundamental frequency (Kirtley 2011; Linville 1998; Smyth et al. 2003), and /*ay*/ monophthongization (Kirtley 2011; Plichta and Preston 2005; Rahman 2008). This asymmetry raises a number of questions pertaining to why individuals show an awareness of the association between some linguistic variants and social categories but not all.

The context of the variable has been investigated as an explanation for individuals' inability to overtly identify social meaning that is expected to be indexed

onto a variable. As speech is inherently a social act, usually performed between a speaker and an interlocutor, both of whom are active participants in the exchange, we can expect that interpretations of meaning are contingent upon the interactants' experiences, social positions and goals. In the case of Campbell-Kibler (2007, 2008, 2011), listeners rated a speaker who used the alveolar variant as compassionate when they perceived the speaker to be Southern, while rating the same speaker as condescending when they perceived the speaker to be from elsewhere. Social information about the speaker has also been shown to influence how listeners perceive the speech of the individual (Hay and Drager 2010; Hay et al. 2006a, 2006b; Koops et al. 2008; Niedzielski 1999; Strand 1999). In Hay and Drager (2010), New Zealand English speakers were exposed to either stuffed toys associated with Australia (kangaroos and koalas) or toys associated with New Zealand (stuffed kiwis) during a vowel perception task. Participants showed a shift in their perception boundaries according to which set of toys they were exposed to, i.e., participants matched natural vowels with more Australian-like synthesized vowels when they were in the Australian "kangaroo" condition. Thus, it is clear that listeners' beliefs about the speaker are one factor that influences their perception of speech and indexed social meaning; however, other contextual factors, such as factors relating to the situational context, remain to be investigated in this way.

Given the history of inquiry into social meaning, the fluid and flexible nature of sociolinguistic perception presents an interesting question. There is no denying the role of speaker-context in individuals' perceptions, both in terms of speakers and socially indexed meaning; however, if linguistic production reflects the recruitment of variables for the communication of social meaning, why then are listeners' overt judgments so asymmetrical in nature? This is especially important when the asymmetry creates a phenomenon that violates both foundations that are required for speakers to use socially indexed meaning to construct identities, stances and personas. That is, the meaning must be indexed and subsequently be retrievable by individuals. One possible explanation lies in the ease with which a form is perceived by a listener, that is, the form's social salience. Labov (1972b) proposed a model of social salience which delineates three variable types, demarcated by speakers' awareness of their existence. The first level are *indicators*, which show zero degrees of social awareness and are therefore difficult to detect for both linguists and native speakers. *Markers* are usually socially stigmatized forms characterized by sharp social stratification across groups and styles. The highest level of social awareness for variables is the *stereotype* category. *Stereotyped* forms display both social and stylistic stratification and are subject to explicit meta-commentary due to their overt level of social awareness in the speech community. The salience of a variable in the speech community could therefore be crucial to the success of a listener's awareness of the form. That is, if the variable is non-salient, at the *indicator* level, its associated

social meaning(s) may not be learned by the listener. This claim also fits with the social category in question. Categories may share a similar scalic nature, where some are more significant to certain speech communities compared to others. It could therefore be that listener evaluations of socially indexed meaning are contingent upon the salience of the linguistic variable and the importance of the social category in question. Thus, the present paper examines individuals' evaluations within a language community where the social category is not only suggested to be indexed onto the variables through their correlations in production but the linguistic variants and category are overtly marked in the language system and culture.

2 Gender marking in Japanese

Because linguistic variables have been shown to index a number of social meanings, some of which do and do not pattern with correlations in production, the current study takes the focused approach of examining only the social category of gender. Specifically, we investigated the category of gender and variables which pattern with the category in production. Our interests lie in the comparison between social categories found in production and those that are identifiable by individuals in perception. We, therefore, contribute to the wealth of knowledge pertaining to third wave variationist work by beginning this line of research with a single category which lays the foundation for further study of additional and potential co-present categories in future work (cf. Okamoto and Shibamoto-Smith (2016) for a detailed account of potential co-present categories and sociolinguistic categorization in Japanese).

The social category of gender has been widely studied in the domain of sociolinguistics. We would like to note the distinction here between gender, a constructed ideology that depends on perception, and sex which is a biological category. The category of gender has been claimed to be as impactful to the constructions of identity as the dimensions of region and age (Podesva and Kajino 2014). It abstracts over a range of globally and locally constructed practices (Eckert and Labov 2017). One of the earliest studies to examine the correlations between gender and speech was performed by Fischer (1958), who found that girls consistently used more of the perceived standard form of the (ING) variable [ɪŋ] than boys, a pattern that was later discussed by Labov (2001) as a preference for women to use more standard varieties than men. In addition to prestige, a number of sociolinguistic variables have been studied in connection with gender, for example, the Northern Cities Chain Shift (Eckert 1989), high-rising terminals in Australian English (Guy et al. 1986) and in New Zealand English (Britain 1992), and glottal stops in British English (Milroy et al. 1994). Gender has also been studied in other languages within a sociolinguistic framework.

Some examples include phonological, morphological and lexical differences between male and female speakers of Koasati (Haas 1944), monophthongs and diphthongs in the speech of Tunis women (Trabelsi 1991), and patterns of non-palatalized [l] in Crete (Mansfield and Trudgill 1994).

Japanese, in particular, is a key language of interest, given the ideology that surrounds the social construct of gender. During the Meiji period (1868–1912), male intellectuals pushed the notion of the "ideal" woman, leading to the construction of Japanese Women's Language (Inoue 2002, 2004, 2006; Nakamura 2008). Among others, the use of feminine self-referential forms (e.g., *atakushi* 'I'), beautifying prefixes *o-* and *go-* (e.g., *o-sushi* 'sushi,' *go-han* 'rice'), honorific expressions, as well as the use of new sentence-final particles to be used by women in place of traditional particles used by speakers of both genders, were advocated and propagated as the appropriate way for females to speak (Kajino 2014). These features were overt in the speech community, and would therefore be considered to be at least *markers*, if not *stereotypes*, on a social salience scale. While women's speech is no longer constrained by official policy, metapragmatic discourses, both in real-world situations and fictional works (Mizumoto 2006; Mizumoto et al. 2008; Nakamura 2013), continue to demarcate socially desirable representations of "good" or "appropriate" feminine speech (Okamoto and Shibamoto-Smith 2016). Thus, the overt distinction between what is considered to be women's speech and men's speech in Japanese culture lends itself as an ideal case study for examining individuals' awareness of the association between the category of gender and linguistic variables.

The linguistic features that have been examined as stereotypical features that correlate with the gender of the speaker frequently address the use of polite expressions. In her work on politeness and women's language in Japanese, Ide (1982) notes the variation between men's and women's speech in the case of personal pronouns and honorifics. The list in (1) presents the representative forms of first-person pronouns by gender. The forms are marked with asterisks to indicate the degree of honorification (two asterisks indicate the highest degree).

(1) First-person singular pronouns

Degree of politeness	men's speech	women's speech
Highest	*watakushi***	*watakushi***
	*watashi**	*atakushi**
	boku	*watashi*
Lowest	*ore*	*atashi*

Almost all forms are clearly associated with one of the two genders by appearing in only one of the lists. In these cases, the speaker's deference towards the status of their interlocutor is expressed through the level of honorific degree as well as their self-identification as a male or female speaker. The cases of *watakushi* and *watashi*

however are exceptions. *Watakushi* is the politest first-person pronoun for both male and female speakers. *Watashi*, on the other hand, is a polite form in men's speech and also a plain form in women's speech. That is, *watashi* has a distinction at the level of politeness between the two genders, unlike *watakushi*. The gendered distribution of Japanese pronouns has been examined both in naturalistic speech and in written text (Hagino 2007; Kojima 2013; Miyazaki 2002, 2004; Nakamura 2009; Owada 2011). In a study examining the speech of Japanese university students, Hagino (2007) found a tendency when speaking for men to use the pronoun *ore* (75.6 % of total pronouns) and females to use either *watashi* (36 %) or *uchi* (42 %). A distinction in gendered pronoun use can also be seen in the speech and literature of Japanese children. Nakamura (2009) examined elementary-school textbooks of the Japanese language and found that all five included units where girls were encouraged to use the female first-person pronoun *watashi* and boys the male first-person pronoun *boku*. In addition, Miyazaki (2002, 2004) found that some junior high school girls use masculine self-referential terms (e.g., *boku, ore*) instead of feminine forms (e.g., *watashi, atashi*). The varying degree of use of the variables according to the sex of the speaker suggests there are two levels of distinction for the forms: namely, deterministic, where the forms are used almost exclusively by one gender (e.g., *ore* and *atashi*), and probabilistic, whereby the forms have a higher frequency of use by one gender but are also used by the other (e.g., *boku* and *watashi*). It is important to note that we do not use the term deterministic in the sense that the relationship is fixed, rather, we use deterministic to indicate that the probability of the variable occurring with one gender or the other is very high.

Sentence-final particles have also been linked to gender in Japanese. These particles are used to express the speaker's stance and are found most frequently in informal speech. As with pronouns, sentence-final particles correlate with the gender of the speaker as there is a higher frequency of use by one of the sexes with certain forms (Ide 1990; Ide et al. 1992; Ide and McGloin 1990; McGloin 1991; Mizumoto 2006; Mizumoto et al. 2008). Ide and Yoshida (1999) discuss some of the sentence-final particles and their use by each sex in production. They note that some particles are used almost exclusively by one sex, while others only have a higher frequency of use by male or female speakers. For example, the particle *ze* has a 100 % proportion of use by male speakers, whereas the particle *wayo* has a 100 % use by female speakers. The particle *ka*, on the other hand, has an 84 % proportion of use by male speakers, and the particle *wa* has an 89 % proportion of use by female speakers. The particle *wa*, and other feminine sentence-final particles, are claimed by Ide and Yoshida to have two different functions. The first is to establish empathy between the speaker and the interlocutor and the second is to soften the statement. To soften the statement, in this case, is a politeness strategy, as it weakens the imposition of the statement upon the interlocutor. The particles that are either exclusively or have a

higher frequency of use by males, such as *zo, ze, yo,* and *na*, do not indicate softening and instead convey self-confidence, assertion, or confirmation. While a detailed account of Japanese pronominal and sentence-final particle use is outside of the scope of the current paper, Nakamura (2014) and Okamoto and Shibamoto-Smith (2016) provide overviews of Japanese gendered language, highlighting the use of stereotyped norms and the differences in the use of forms in naturalistic conversations and mediatized texts.

Outside the linguistic features studied under the lens of women's language, other Japanese sociolinguistic variables have also been shown to be used disproportionately with one sex compared to the other. The reduced variant of the Japanese potential verb suffix is a well-discussed example in the literature (Ito and Mester 2004; Katada 1998; Kinsui 2003). It occurs when the potential suffix *-rare* is realized as *-re* by deletion of the syllable *-ra*. Thus, the phenomenon is known as *ranuki* '*ra*-deletion'. The long form, *-rare*, is the older variant which is the conservative and prescribed form of the suffix (Katada 1998; Sano 2009). The short form *-re* is the more recent variant of the potential verb suffix, first observed in the early 20th century, circa 1920 in the Kanto region in Japan (Kinsui 2003), and it is stigmatized as sloppy and lazy Japanese (Fumio 1998; Ito and Mester 2004). Discussions of *ra*-deletion in the literature have revealed that a relationship exists between the variant and speakers' demographic categories. The distribution of *ra*-deletion has been shown to correlate with gender (Matsuda 1993; Miller 2004; Sano 2009, 2011), sex (Fuji et al. 2008; Matsuda 1993; Sano 2009, 2011), region, education, formality, and spontaneity (Sano 2009, 2011). In terms of sex, specifically, the corpus results presented in Sano (2009, 2011) showed a higher distribution of *ra*-deletion among females (females = 9.5 % of *ra*-deletion in the overall use of potential suffixes; males = 5.1 %). Contrarily, the self-report findings in Sherwood (2015) showed a higher frequency of *ra*-deletion in males (males = 44 % of *ra*-deletion in the overall use of potential suffixes; females = 27.4 %). Interestingly, the natural data and the self-reported data showed correlations that differed in the direction of the association between the variant and the sex of the speaker. This mismatch can be attributed to the linguistic security of the speaker, whereby speakers' reported language use often reflects the pattern which is deemed to be socially desirable, whether the pattern be perceived as correct or incorrect by the speech community (Labov 1966b; Trudgill 1972). The tendency of males to self-report a higher usage of *ra*-deletion suggests that the variant is both socially salient and regarded to be a feature of vernacular speech, as standard forms are often more common in female speech (Fischer 1958; Labov 2001).

More recently, *ra*-deletion has also been examined within a third wave framework. Sano (2017) argued that the productive use of *ra*-deletion indexically signals fine-grained stylistic information. He found that the distribution of *ra*-deletion differs according to the relationship between speakers and the setting of the utterance.

Specifically, *ra*-deletion is used to signal interpersonal relationships demonstrating intimacy/solidarity, and settings associated with the purpose and the atmosphere of the interaction. While these findings have significantly contributed to our understanding of *ra*-deletion on a stylistic level, we do not yet know whether *ra*-deletion indexes social meaning pertaining to the background of the speaker, such as their gender. That is, we do not know if individuals are able to judge these correlating social categories as social meaning from a speaker's use of the variant.

Therefore, the current study examines the possible indexical association between Japanese linguistic variables and the social category of gender. In two perception experiments, we investigate pronouns, sentence-final particles and suffixes. We begin by first examining whether Japanese speaker-listeners associate the gender of a speaker with linguistic variables that have been previously shown to correlate with the social category of gender in production. This aim directly targets the second of the two foundations that presuppose individuals' ability to use socially indexed meaning to construct identities, as outlined in the section above (Introduction). Experiment 1 explores the role of awareness in the evaluation of social meaning. In Experiment 2, we explore the role of context in individuals' evaluations. In order to build upon the studies mentioned above (Hay and Drager 2010; Hay et al. 2006a, 2006b; Koops et al. 2008; Niedzielski 1999; Strand 1999), we examined situational context compared to context in the sense of knowledge about the speaker. This decision was made to further unpack the role of context, specifically, whether the judgments of social meaning are altered by knowledge of the speech utterance compared to knowledge of the speaker.

3 Experiment 1

This first experiment aimed to test the hypothesis that the social category of gender would be identifiable by Japanese individuals from linguistic variables that pattern with speaker sex in production. This expectation was formed on the basis that all forms in question have an overt salience in the speech community (markers or stereotypes), and the social category itself, gender, has a high significance in the speech community. We sought to examine attitudes towards variables that have been shown to correlate with the sex of the speaker in production. Specifically, the first-person singular pronouns *ore, atashi, boku* and *watashi*, and sentence-final particles *ze, wayo*, *nda* and *wa*. Given that the distribution of the phenomenon of *ra*-deletion has been previously shown to correlate with the social category of sex and gender in both corpora (Matsuda 1993; Sano 2009, 2011) and self-reports (Sherwood 2015), we also selected the potential suffix allomorphs for our case study. It is worth noting, however, that unlike pronouns and sentence-final particles which have been

strongly, and in many cases prescriptively, associated with the gender of the speaker, the proportion of *ra*-deletion in natural speech (<10 % of the overall use of potential suffixes) is significantly lower than proportions suggested in even the probabilistic degrees of sentence-final particle usage (>84 %). We, therefore, expected that, while *ra*-deletion was hypothesized to have a social salience at either marker or stereotype level, the effect size would be smaller than that of the other variables in question.

3.1 Experiment 1: methods

The participants were recruited primarily through word of mouth and online networking sites that were circulated through the researchers' friend networks, mostly via Facebook and Twitter. A total of 63 native Japanese participants (30 male; 33 female) took part in this experiment, with an age range of 18–65 years at the time of testing (see Table 1). They had grown up in a variety of prefectures, including, Tokyo, Saitama, Yamaguchi and Kagawa. Thirty five participants were students at the time of testing, and 28 volunteered that they were employed (not students).

The complete stimulus set presented during the task included 120 sentences comprising four different condition types: PRONOUN, SENTENCE-FINAL PARTICLE, RANUKI and LEXICAL. The complete list of sentences appears in Appendix. Recall that past research has demonstrated a distributional correlation between the social category of sex and speakers' pronoun choices (Hagino 2007; Ide and McGloin 1990; Kojima 2013; Miyazaki 2002, 2004; Nakamura 2009; Owada 2011) and sentence-final particle choices (Ide 1979; Ide and McGloin 1990; McGloin 1991; Mizumoto 2006; Mizumoto et al. 2008) in speech production. Variation in potential suffix allomorphs has also been shown to correlate in production with the social category of sex (Matsuda 1993; Sano 2009, 2011). The aim of this experiment was to compare the different condition types with lexical choices which evoke participants' perceptions of gender. All stimuli sentences were presented in plain, non-honorific, form in an effort to avoid evoking gender attitudes through distinctions in politeness (Ide 1990; Okamoto and Shibamoto-Smith 2016). Note that in Japanese, plain form refers to one of the two grammatically expressed clause-final forms that marks the absence of addressee

Table 1: The number of participants according to age brackets and sex.

Participant gender	18–25	26–35	36–45	46–55	56–65	66–75	Total
Males	17	7	3	1	1	1	30
Females	15	8	4	4	2	0	33

honorifics, namely, *-ru*. The other, the polite form *-masu*, marks the presence of addressee honorifics.

Fourty sentences were chosen as PRONOUN stimuli, with two subgroups within the condition, namely, DETERMINISTIC and PROBABILISTIC. The ten sentences used in the DETERMINISTIC subgroup included the first-person pronouns *ore*, used almost exclusively by male speakers, and *atashi*, which is used primarily by female speakers (10 sentences × 2 deterministic pronoun variations [male, female]). While the ten sentences in the PROBABILISTIC subgroup included the first-person pronoun *boku*, which has a higher frequency of use by male speakers but can also be used by female speakers, and *watashi*, which has a higher frequency of use by female speakers but can also be used by male speakers (10 sentences × 2 probabilistic pronoun variations [male, female]). Due to the rarity of the DETERMINISTIC pronouns occurring in the speech of the opposite gender, we expected to see a larger difference in the DETERMINISTIC subgroup results compared to the PROBABILISTIC subgroup.

Fourty sentences were chosen as SENTENCE-FINAL PARTICLE stimuli, again including the DETERMINISTIC and PROBABILISTIC subgroups. The ten sentences used in the DETERMINISTIC subgroup included the sentence-final particle *ze*, used primarily by male speakers, and *wayo*, which is used primarily by female speakers (10 sentences × 2 deterministic sentence final-particle variations [male, female]). The ten sentences in the PROBABILISTIC subgroup included the sentence-final particle *nda*, which has a higher frequency of use by male speakers but can also be used by female speakers, and *wa*, which has a higher frequency of use by female speakers but is also used by male speakers (10 sentences × 2 probabilistic sentence-final particle variations [male, female]). Again, due to the rarity of the DETERMINISTIC sentence-final particles occurring in the speech of the opposite gender, we expected to see a larger difference in the DETERMINISTIC subgroup results compared to the PROBABILISTIC subgroup.

Ten vowel-final verbs were chosen as the RANUKI stimuli, which created a total of 20 sentences. The verbs appeared in both the long form of the potential verb suffix, *-rare*, and the short form of the potential verb suffix, *-re*. All RANUKI stimuli verbs had *e* as the stem-final vowel, were bimoraic, were monomorphemic, were in main clauses, were in positive sentences, and they were preceded by the case particle *ga* to avoid any confusion of the semantic meaning or homophony with the passive marker (10 verbs × 2 variations [long, short]). These factors were controlled because they are known to influence the distribution of potential suffix allomorphs (Matsuda 1993; Sano 2009, 2011). All RANUKI stimuli sentences end with *-nodewa* to maintain consistency with the other test conditions. Furthermore, *-nodewa* is a particle used to express a speaker's uncertainty which has not previously shown variation according to the gender of the speaker, ensuring participant judgments are restricted to variation in the potential suffix and not the sentence-final particle.

The remaining 20 stimuli made up the LEXICAL stimuli (10 sentences × 2 lexical variations [male, female]). An example of a lexical choice more likely said by a male was *sarariiman* 'salaryman', and the female variation for this sentence was *hosutesu* 'hostess'. While lexical features other than pronouns and swearing are not often examined for gender effects, they were included in this study to act as filler sentences that could be compared with the other test conditions. All stimuli items were checked by three native speakers to confirm the sentences reflected natural speech and were grammatically correct.

The participants performed the perception task in the format of an online survey administered by Qualtrics online survey software. All instructions, materials and stimuli were presented in Japanese. This procedure allowed the participant the freedom to choose the device they performed the procedure on (computer or mobile device), and the location and the time of day they wanted to perform the task. By providing these freedoms for the participants and removing an interviewer from the procedure, we hoped to avoid complications known to arise from the observer effect (Labov 1972a). On average, it took the participants 13 minutes to complete the online survey.

In the first section of the survey, the task was to judge if the presented sentence was more likely said by a male or a female speaker. The participants were instructed to use a five-point adjective scale to indicate if the sentence was more likely said by a male (1) or by a female (5). The odd number provided participants the opportunity to indicate a neutral judgment of the sentences, an option that would not be possible with a forced choice method. Each sentence was presented in written form to the participant one at a time in pseudo-random order. Written speech was used as opposed to audio recordings to ensure that participants made their judgments on the sentences alone, without the use of acoustic characteristics to inform their judgments. For example, vowel formant frequencies are lower, bandwidths are wider and the fundamental frequency is generally lower for male speakers (Peterson and Barney 1952). It is possible to examine *ra*-deletion through written stimuli as the phenomenon has been shown to occur both in speech and in casual and informal writing (Ito and Mester 2004).

The second section of the survey was designed to collect participants' demographic data, including their age, gender, occupation, birthplace, where they grew up, and whether they were a student studying at a university. This information was collected in the second section of the survey to both allow participants to fully understand the task before asking them to provide their demographic information and to avoid any possible biasing effect of the survey on gender responses.

3.2 Experiment 1: results

Figure 1 shows the mean ratings, with maleness represented by lower numbers and femaleness represented by higher numbers. The mean responses are presented by condition, including the subgroups of the PRONOUN and SENTENCE-FINAL PARTICLE conditions. Higher scores indicate that participants judged the sentences as more likely to have been said by a female speaker, and lower scores show that participants thought that the sentence was more likely to have been said by a male. A score of 3 would suggest that participants do not associate the respective variable with the social category of gender. The items in the DETERMINISTIC subgroups for both the PRONOUN condition and the SENTENCE-FINAL PARTICLE condition were clearly identified as more likely said by a male or female speaker. This is also consistent for the PROBABILISTIC subgroups for both the PRONOUN condition and the SENTENCE-FINAL PARTICLE conditions and the LEXICAL condition. However, the difference is smaller for the PROBABILISTIC subgroups and the LEXICAL condition. An ordinal logistic regression analysis was conducted to determine whether the judgment scores differed significantly for the ambiguity factor (deterministic vs. probabilistic) and condition type (pronoun, particle, lexical or suffix). However, neither the ambiguity of the variable was a significant predictor in the model, coefficient estimate Exp(B) = 0.839, p = 0.664, log-likelihood test χ^2 (1) = 0.189, p = 0.664; nor the condition type, coefficient estimate Exp(B) = 0.867, p = 0.348, log-likelihood test χ^2 (1) = 0.882, p = 0.348.

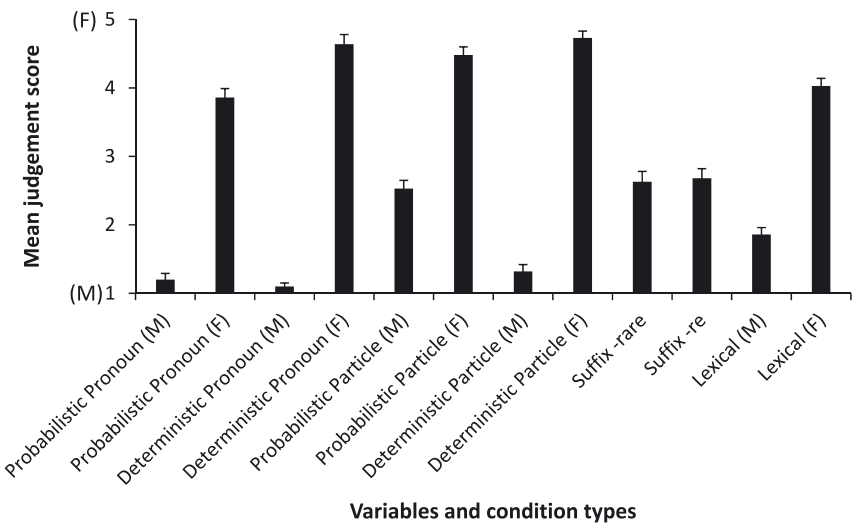

Figure 1: Mean judgment score by condition. Judgment scores ranged from 1 – Male (M) to 5 – Female (F). Error bars represent 95 % confidence intervals.

While there was no significant difference between the factors of ambiguity and condition, the differences of the PRONOUN, SENTENCE-FINAL PARTICLE and LEXICAL conditions were far stronger than in the RANUKI condition. Surprisingly, no difference was observed for mean judgments of long-form, *-rare* (2.63), and short-form items, *-re* (2.68). This was despite the significant gender effects reported in both the corpus study results and the self-report results. Specifically, the corpus results (Sano 2009, 2011) showed a higher distribution of *ra*-deletion among females (females = 9.5 % of *ra*-deletion in the overall use of potential suffixes; males = 5.1; the self-reports (Sherwood 2015) on the other hand showed a higher frequency of *ra*-deletion in males (males = 44 % of *ra*-deletion in the overall use of potential suffixes; females = 27.4 %). To understand this discrepancy between the current result and those of previous studies, the result of the current study was further investigated by examining the distribution of responses.

To examine whether the overall speech community was not sensitive to the gender effect, or if there were some individuals who interpreted *ra*-deletion as indicative of a female or male speaker, a gender score was created by subtracting the participant's mean *-re* score from their mean *-rare* score. Positive gender scores indicated that the participant judged *-re* items as more likely said by males, whereas negative gender scores suggested the participant judged the *-re* items as more likely said by females.

Figure 2 shows the frequency distribution of the gender scores for each participant. The majority of gender scores clustered around the mean gender score (–0.05), indicative of a normal unimodal distribution. This suggests that the majority of participants did not associate the gender of a speaker with the potential suffix allomorph variant. There were, however, individuals who associated potential suffix allomorphs with the gender of the speaker. Four participants had a negative gender score that was less than one standard deviation below the mean (<–0.6). And one participant had a positive gender score that was greater than one standard deviation above the mean. Table 2 provides the demographic breakdown for each of these participants. There were no conclusive patterns to suggest an underlying reason that might explain why these particular individuals were sensitive to the effect of gender on *ra*-deletion.

3.3 Experiment 1: discussion

In line with the predictions formed on the basis of the process of indexicalization and exemplar-based models, Japanese participants identified the gender of a speaker through the use of linguistic variables which have been previously shown to correlate with the social category of gender. Specifically, the participants were able

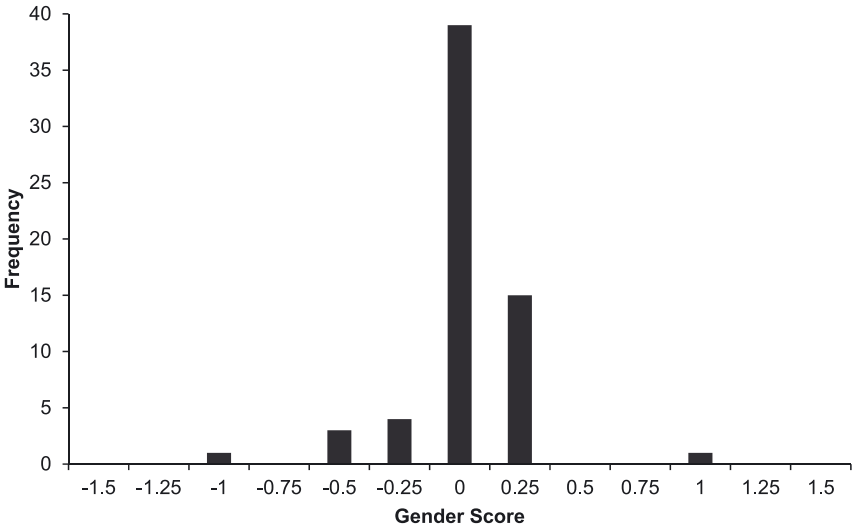

Figure 2: Distribution of participants' gender scores for *ra*-deletion. Positive gender scores indicate the participant judged ra-deletion sentences as more likely said by a male speaker.

to judge pronoun and sentence-final particles which have been shown to correlate with the sex of the speaker. The participants were also able to do this with lexical items that evoked a particular gender. However, despite the significant effect of gender on *ra*-deletion distribution found in both the corpus studies (Matsuda 1993; Sano 2009, 2011) and in self-reports (Sherwood 2015), the participants did not judge the gender of the speaker from the use of *ra*-deletion. This result suggests that the correlation between gender and *ra*-deletion observed in production data is not present in perception. Specifically, it does not appear to be the case that Japanese native speakers are able to create associations between the gender of a speaker and

Table 2: Qualitative analysis of participants with a gender score greater than and less than one standard deviation from the mean.

Gender score	Age	Sex	Life stage	Birthplace	Raised in	Occupation
−0.7	18–25	Male	Student	Tokyo	Tokyo	
−0.7	18–25	Female	Student	Miyagi	Miyagi	
−0.6	46–55	Female	Worker	Osaka	Osaka	School administration
−1.2	36–45	Female	Worker	Tokyo	Tokyo	Salaryman
0.8	46–55	Female	Worker	Kanagawa	Tokyo	Housewife

potential suffix allomorphs and, by extension, individuals may thus be unable to infer the gender of the speaker as social information on the variable.

One possible explanation for the present findings is that responses for the *ra*-deletion items could be a type-two error, whereby the current method, which deployed an adjective scale, simply failed to detect a gender effect. This possibility is based on the findings of previous research which demonstrated that Japanese participants more frequently report difficulty with adjective scales and more frequently select the midpoint of the scale (Lee et al. 2002). We consider this explanation unlikely because the use of adjective scales was sufficiently sensitive to detect a significant result for the other variable conditions: the PRONOUN, SENTENCE-FINAL PARTICLE and LEXICAL conditions. Furthermore, we replicated the experiment in a new sample population but replaced the adjective response scale with forced-choice binary options as part of an independent study that explores the task effect in sociolinguistic studies (Sherwood et al. in progress). The results were not different from the adjective scale version of Experiment 1, and again, we found a very small difference in the mean judgment scores for long-form items, *-rare* (1.30), and short-form items, *-re* (1.34). While this small difference was in the same direction as the adjective scale version of Experiment 1 and the corpus study results (i.e., short-form items were more likely judged as being said by a female speaker), the difference did not reach statistical significance.

Another possible explanation for the apparent lack of association between the gender of the speaker and the potential suffix allomorph lies with the salience and attentional weighting of the variable in the speech community. As predicted above, while *ra*-deletion has shown a correlation with the gender of the speaker in previous corpora and self-report studies, the effect sizes of the correlations were significantly lower than the degrees of usage suggested in even the probabilistic sentence-final particles, which led to smaller, yet still significant predictions regarding an effect of *ra*-deletion in the present study. This expectation was informed by the variable's level of social awareness in the speech community. We argue that *ra*-deletion has been enregistered in the speech community as it is a recognizable form with cultural and social value (Agha 2003, 2007). The associations between the variable and its correlating factors may be mediated by the frequency with which Japanese speakers encounter the variable with a specific gender of the speaker. Recall that exemplar-based models offer an account for the activation and recollection of stored experiences (Goldinger 1997; Johnson 1997; Pierrehumbert 2001). The expectation of usage-based approaches to language learning such as these is that sociolinguistic variables that are more prevalent in the speech community will have stronger salience and lead to more accurate evaluations of social meaning by individuals. However, we have already seen that this is not the case. Variables with high social salience do not always show a one to

one mapping with the social stratification of the variable in the speech community. Theories incorporating exemplar weights (Nosofsky 1988; Sumner et al. 2014) have suggested that memory effects which cannot be predicted by frequency-based accounts can be explained by differences in how strongly certain episodes are encoded. An attentional mechanism has been proposed (Sumner et al. 2014), whereby some exemplars draw more attention than others and their encoding is therefore strengthened. In the case of *ra*-deletion in the present study, the variable and its association with the social category of gender may be influenced by such a mechanism. While outside of the scope of the current study, such an enquiry which examines multiple social categories which have been shown to correlate with *ra*-deletion, including gender, may reveal possible weightings of indexed meanings and determine if the variable is associated with the gender of the speaker or simply produced as a result of imitative social conditioning.

It is also possible that the explanation for the case of *ra*-deletion items lies with the activation of the category in perception. Linguistic variables have been shown to index multiple social meanings which are perceivable by individuals. Recall that previous research has shown that the perception of variables can be affected by social information about the speaker (Hay and Drager 2010; Hay et al. 2006a, 2006b; Koops et al. 2008; Niedzielski 1999; Strand 1999). Using photographs to manipulate the perceived socioeconomic status and age of speakers in a perception experiment, Hay et al. (2006a, 2006b) found that participants' accuracy at identifying distinct tokens of the diphthongs depended on the social characteristics of the person in the photograph. Moreover, Pharao et al. (2014) found that these meanings can be activated or changed depending on context. They had listeners perform an evaluation task in the format of a matched guise study in which they judged the phonetic variant [s] in different prosodic contexts. Results showed that [s] indexes femininity and gayness when it occurs in 'modern Copenhagen,' whereas the (s)-variation has a different and less significant effect when occurring in 'street language'. Another study conducted by Smyth and colleagues (2003) found a similar result. They found that men speaking in formal contexts were more likely to be perceived as feminine/gay than when speaking in informal contexts.

The importance of context is also addressed from a usage-based perspective. Bybee (2010: 55) noted that while meaning is always situated in context, our experience with the physical world is neither uniform nor flat, resulting in potential variations with how people come to perceive and care about certain parts of the temporal domain above others. The situational context of an utterance, contrastively to the context regarding the knowledge of the speaker, may influence the relationship between the variable and a social category in perception, and this may explain the variance in category perception. That is, certain languages, individuals and

speech communities may be more sensitive to the importance of a given category compared to another, affecting the identification of that category. Interactions between semantic meanings and pragmatic meanings may also play a role in the perception of socially-indexed meaning. This is not to say that there is no uniformity across speakers, which is a surprising phenomenon in itself. Frequency of occurrence can also significantly influence categorization in language (Bybee 2010: 84). Exemplars are built up through experience, suggesting that the more frequently an utterance occurs with a category, the more likely the relationship will be retrievable by listeners and accessed for production by speakers. This may have an effect if the distribution of a variable correlating with a social category is more prominent in a particular speech context, such as between friends in a social environment and employees in a workplace environment. Correlation between a social category and a linguistic variable may therefore require a situational context in order to be identifiable.

Thus, if social information, specifically the situational context of the utterance, is important in retrieval, it could offer an explanation as to why the gender of the speaker was not identifiable for *ra*-deletion items in Experiment 1. In addition, it could be the case for the previous studies examining evaluations of socially-indexed meaning on linguistic variables that the situational context required activation before the social categories could be judged. The role of situational context in the activation of associations between linguistic variables and social categories was therefore examined in Experiment 2.

4 Experiment 2

Experiment 2 tested the hypothesis that some categories that correlate with linguistic variables require activation from a relevant situational contextual category to be perceivable by individuals. We investigated whether Japanese individuals associate the gender of a speaker with certain linguistic variables within certain situational contexts. To examine this question, we conducted a perception study that was based on Experiment 1 with methodological revisions to include contextual information about the utterances.

4.1 Experiment 2: methods

A total of 47 native Japanese participants (18 male, 29 female) took part in this experiment, with an age range of 18–65 years at the time of testing (see Table 3).

Table 3: The number of participants according to age brackets and sex.

Participant gender	18–25	26–35	36–45	46–55	56–65	Total
Males	7	8	0	1	2	18
Females	11	13	3	1	1	29

Again, the participants were recruited through word of mouth, email and social-networking sites, including Facebook and Twitter. They had grown up in comparable prefectures to participants in Experiment 1, including Tokyo, Saitama and Yamaguchi. Twenty one participants were students at the time of testing, and 25 were employees.

The design and stimuli of Experiment 2 were identical to Experiment 1, with a few key differences in order to examine the role of situational context in the association between linguistic variables and social categories. Firstly, the participants were informed that the sentences being presented were collected from conversations in a workplace environment. Secondly, pictures were used to evoke the notion of the workplace to further communicate the workplace context of the sentences in line with the design used in Hay et al. (2006a, 2006b). The motivation for selecting the workplace as the situational context comes from the interaction between gender and formality in Japanese. Recall Ide's (1982) findings on politeness and women's language in Japanese discussed above that variation was shown to exist between men's and women's speech in the case of politeness. Furthermore, Okamoto and Shibamoto-Smith (2016) note the strong relationship between politeness and gendered language. Thus, the situational context of the workplace, specifically a white-collar workplace, presents an opportunity to activate this interaction and, potentially, individuals' awareness of associations that may exist between variables and gender.

In the first section of the survey, the task was again to judge if the presented sentence was more likely said by a male or a female speaker. The participants were instructed to use a five-point adjective scale to indicate if the sentence was more likely said by a male (1) or female (5). Two pictures of potential speakers appeared on either side of the scale. One picture was of a male office worker in a black-and-white suit, and the other was of a female office worker in a black-and-white suit. The participants were asked to select which person was more likely to have said the sentence in question.

4.2 Experiment 2: results

Figure 3 compares the results for both Experiment 1 (no context) and Experiment 2 (context). The higher mean judgment scores indicate that participants judged the sentences as more likely said by a female speaker, while lower mean judgment scores are more likely judged by the participants as being said by a male speaker.

As shown in Figure 3, the overall pattern was similar across the no-context and with-context rating conditions (dark grey and light grey bars were similar across the 12 variables). The results of the PRONOUN, SENTENCE-FINAL PARTICLE and LEXICAL conditions are consistent with the pattern observed in Experiment 1. The items in the DETERMINISTIC subgroups for both the PRONOUN condition and the SENTENCE-FINAL PARTICLE condition were again identified as more likely to have been said by a male or female speaker, respectively. The pattern was also observed for the PROBABILISTIC subgroups for both the PRONOUN condition and the SENTENCE-FINAL PARTICLE conditions and the LEXICAL condition. The difference was smaller for the PROBABILISTIC subgroups and the LEXICAL condition but clearly demonstrated that the participants registered a difference according to the gender of the speaker. However, there appeared to be no differences between the RANUKI conditions, *-rare* and *-re*.

To test these possibilities, mean judgment scores were analyzed with a 2 × (12) ANOVA, with the between-subjects factor of context group (context vs. no-context)

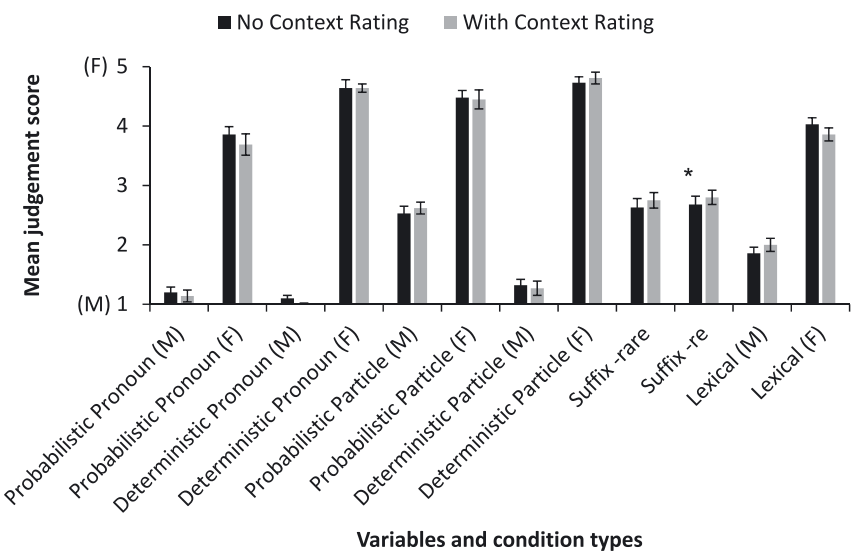

Figure 3: Mean judgment score by condition with no context and context. Judgment scores ranged from 1 – Male (M) to 5 – Female (F). Error bars represent 95 % confidence intervals.

and the within-subjects factor of variable (PROBABILISTIC Pronoun (M) vs. PROBABILISTIC Pronoun (F) vs. DETERMINISTIC Pronoun (M) vs. DETERMINISTIC Pronoun (F) vs. PROBABILISTIC Particle (M) vs. PROBABILISTIC Particle (F) vs. DETERMINISTIC Particle (M) vs. DETERMINISTIC Particle (F) vs. Suffix -rare vs. Suffix -re vs. Lexical (M) vs. Lexical (F)). The normality assumption was violated for some variables which were moderately skewed. However, ANOVA is robust to such violations (Carifio and Perla 2007). Thus, following the recommendations of Brown and Forsythe (1974), we employed Levene's test of equality of variances that used the median, which showed, crucially, that the homogeneity of variance assumption was met, as was the homogeneity of covariance assumption (nonsignificant Box's M). The results revealed no significant difference between the context and no-context groups, F (1, 108) = 0.094, p = 0.759, η_p^2 = 0.001, as shown in Table 4. There was a significant main effect of variable, F (11, 1,188) = 1,114.56, p < 0.001, η_p^2 = 0.912, and a significant Context Group × Variable interaction, F (11, 1,188) = 1.855, p = 0.041, η_p^2 = 0.017. We examined the interaction via a series of orthogonal planned comparisons, employing an adjusted alpha of 0.025 (Bird 2004). Providing a workplace context did however affect judgments of gender for *ra*-deletion. In a work context, *-re* is less gendered; that is, the short form is less likely to trigger a maleness judgment when it is used in the workplace t (1,108) = 1.278, p = 0.012. None of the other comparisons reached significance, p > 0.025, and all are reported in Table 4.

Table 4: Differences between context and no-context mean judgment scores for each of the conditions.

Variable	Type	No context rating	With context rating	*t* (1, 108)	*p*
Probabilistic pronoun (M)	Pronoun	1.20	1.14	−1.034	0.153
Probabilistic pronoun (F)	Pronoun	3.86	3.69	−1.789	0.868
Deterministic pronoun (M)	Pronoun	1.10	1.01	−0.833	0.284
Deterministic pronoun (F)	Pronoun	4.64	4.68	−0.584	0.296
Probabilistic particle (M)	Particle	2.53	2.62	1.239	0.566
Probabilistic particle (F)	Particle	4.48	4.45	−0.403	0.489
Deterministic particle (M)	Particle	1.32	1.27	−0.475	0.555
Deterministic particle (F)	Particle	4.73	4.81	1.190	0.116
Suffix *-rare*	Suffix	2.63	2.75	1.243	0.050
Suffix *-re*	Suffix	2.68	2.80	1.278	0.012
Lexical (M)	Lexical	1.86	2.00	1.801	0.181
Lexical (F)	Lexical	4.03	3.86	−1.990	0.660

4.3 Experiment 2: discussion

The comparisons between the context and no-context experiments suggest that, at least for this paradigm, knowledge of the situational context of a speaker's choice of linguistic variable does not affect Japanese individuals' judgments of the speaker's gender. The only exception to this finding was the case of *ra*-deletion. It is possible that in the case of *ra*-deletion, knowledge of the situational context weakens the slight maleness judgment in favor of another socially indexed meaning, such as social status as previously found in Sherwood (2015). The significant effect of situational context for *ra*-deletion items suggests that a relationship exists between the workplace and *ra*-deletion, but not one that is explicitly tied to context, as suggested by the lack of difference across other conditions.

Ultimately, the results of Experiment 2 suggest that the hypothesis that categories that correlate with linguistic variables require activation from a relevant situational context to be identifiable by listeners was not supported. Specifically, the participants' judgments of the speakers' gender for all variables remained unchanged between the context and no context conditions. There must therefore be another explanation for the mismatch between the correlation of *ra*-deletion and the gender of the speaker in production and the lack of this association in perception.

5 General discussion

In two experiments, we investigated the awareness of speaker gender as conveyed by linguistic variables that have a skewed distribution across speaker sex in naturalistic speech. We found that, for variants overtly linked to gendered Japanese language, specifically, pronouns and sentence-final particles, the participants identified the gender of the speaker from these variants. The participants did not do so for the potential suffix allomorphs, even though there is a significant gender-based distributional skew in production. Additionally, situating the sentences within a specific speech context had no significant effect on individuals' judgments.

The fact that the situational context largely did not affect participant judgments in this study does not indicate that context as a whole doesn't play a role in the evaluation of social meaning more generally. Previous work which has investigated the role of both speaker context and situational context has shown that context does have a significant place in understanding social meaning, particularly with regard to listener knowledge regarding the speaker (Hay and Drager 2010; Hay et al. 2006a, 2006b; Koops et al. 2008; Niedzielski 1999; Pharao et al. 2014; Strand 1999). However, the role of situational context could be specific to the language group or the variables

being studied. We expected that for this study the PROBABILISTIC particles and pronouns would be affected by the given context of the workplace. The presence of the first-person singular pronoun *watashi* as a polite form in men's speech, and a plain form in women's speech is a key example. We expected that knowledge of the utterance taking place in a workplace environment, specifically, a white-collar workplace environment, would suggest to individuals that the variable was used in a more formal context and would therefore be more ambiguous and less likely to be spoken by a female in the context condition. The difference in means (no context, 3.86; context, 3.69) did trend with our expectations, but it was not statistically significant in our sample size. Previous research which has examined *ra*-deletion and the contextual category of social status (Sherwood 2015) found that individuals were able to judge the social status of a speaker's interlocutor by the use of potential verb suffix allomorphs alone. Specifically, individuals associate the short form, *-re*, with interlocutors who have a close social distance to a speaker. When a long form is heard, individuals judge that the interlocutor has a larger social distance with the speaker, such as a superior. We can conclude two points from this finding. Firstly, *ra*-deletion does index social status as social meaning, and secondly, politeness and formality are significant within a Japanese workplace environment. The slight maleness judgment for *ra*-deletion in the current study when the workplace context is provided could be an interaction with social status, but further study is needed to explore potential indexical relationships between potential co-present social categories that are tied to the speaker and those tied to the situational context, with particular emphasis on situations pertaining to Japanese workplaces.

Of the many social categories which have been investigated in the field of sociolinguistics, the socially constructed category of gender frequently yields mismatches between correlations in production and perception. There is no denying that the category is significant culturally, specifically in Japanese culture. Gender has been claimed to be as impactful to the constructions of identity as the dimensions of region and age (Podesva and Kajino 2014). This claim and the results of numerous studies across a wide variety of speech communities demarcates that there are a wide variety of linguistic resources that potentially convey speaker gender. However, it is also a category with a high number of mismatches between production and perception based studies (e.g., Baugh 1979; Campbell-Kibler 2007; Guy and Boyd 1990; Kirtley 2011; Labov 1972a, 1972b; Plichta and Preston 2005; Rickford 1999; Staum Casasanto 2010; Wolfram 1969). These mismatches across studies were some of our primary motivations for examining the social category within a speech community where the category was highly overt, which is the case in Japanese. From the results of this study, we can find clear evidence to support the notion that linguistic variables and social categories carry a certain salience with speaker listeners. Japanese pronouns and sentence-final particle variables have a significant association with the

social category of gender, and this association is identifiable by individuals in isolation. *Ra*-deletion on the other hand patterns according to gender in the speech community, but the association with gender is not salient to community members. It seems possible then that *ra*-deletion, which has been found to not index gender as social meaning, may be part of a correlation that is formed as a result of imitative social conditioning, rather than for the use of identity construction. As such, it may be that other variables are being used to index the social meaning of gender, or other stylistic systems, such as clothing and non-verbal communication (Eckert 2008; Mendoza-Denton 2014), rather than the variables that show a correlation with gender in production. As such, *ra*-deletion may be more of a "supportive" variable rather than a "defining" variable for the purpose of identity, persona and stance construction, particularly in the case of gender.

Whatever the specific reason behind only certain variables indexing gender, the focus on examining social meaning through perception-based research methods highlights a significant issue with inferring social meaning through production study findings. The results of the current study show that variables that are stereotyped in the speech community as being attributed to male or female speech convey social meaning. Contrastively, other variables which are nonetheless skewed across gender lines in production may not convey similar social meaning. We cannot, therefore, assume the suggestion that correlations in practice reflect the recruitment of variables for the communication of social meaning. Furthermore, we cannot assume that individuals are capable of drawing upon exemplar clouds for the perception of social meaning. Rather, the beliefs of the individual may be the underlying force that drives the perception of social meaning. Individuals may weigh variables and social categories on a scale similar to Labov's (1972b) model of social salience. A variety of studies in the area of social psychology have demonstrated that individuals draw on pre-existing beliefs and attitudes about social categories when making judgments about an interlocutor (Higgins and Bargh 1987; Levon 2014; Macrae and Bodenhausen 2001). We consequently can benefit from a combination of production- and perception-based methods to better understand social meaning and its role in constructing identities, stances and personas. The results of production studies can lead us to identifying potential social meanings, and perception studies will allow us to test if these social categories are identifiable and may therefore be recruited for the purpose of identity construction.

6 Conclusions

The results of this study show that Japanese individuals draw associations with the gender of a speaker and certain linguistic variables. The examined pronouns and

sentence-final particles were shown to have a strong association with the social category of gender, suggesting both the variables and the category have a significant weight in the speech community. However, we have shown that correlations in production between gender and a specific form are not enough to indicate social meaning, nor is information about the situational context, the speech environment, of the variable sufficient to activate this supposed relationship in perception. The awareness of social meaning appears to be contingent upon the beliefs of the individuals, that is, whether the relationship between a variable and the social category is salient in the speech community. Identifying this association is not achievable by production studies alone but by a combination of both production and perception studies. In this way, we can identify possible social meanings and ascertain which are identifiable, and by extension, are available for identity construction.

Data availability statement: The data underlying this artilce may be found in the OSF repository at https://osf.io/ut6pr/?view_only=566882aed7c647a7a155e920601b5926.

Appendix

Stimuli

RANUKI Code	RANUKI test items	Meaning
Long form items		
rare-01	このバスは５０人の乗客が乗せられるのでは。	This bus can carry fifty passengers.
rare-02	そのドアが開けられるのでは。	I can open that door.
rare-03	名簿に名前が載せられるのでは。	(I) can put my name on the list.
rare-04	佐藤さんに本があげられるのでは。	(I) can give the book to Satou.
rare-05	別の本が見せられるのでは。	(I) can show a different one.
rare-06	土曜日にゴミが捨てられるのでは。	I can throw away garbage on Saturdays.
rare-07	ここでも電気がつけられるのでは。	I can turn on the lights.
rare-08	向こうで円がドルに替えられるのでは。	You can change money over there.
rare-09	近くでもタイ料理やベトナム料理が食べられるのでは。	(You) can eat Thai food and Vietnamese food around here.
rare-10	綿密な計画が立てられるのでは。	I can make a detailed plan.
Short form items		
re-11	このバスは５０人の乗客が乗せれるのでは。	This bus can carry fifty passengers.

(continued)

RANUKI Code	RANUKI test items	Meaning
re-12	そのドアが開けれるのでは。	I can open that door.
re-13	名簿が名前に載せれるのでは。	(I) can put my name on the list.
re-14	佐藤さんに本があげれるのでは。	(I) can give the book to Satou.
re-15	別の本が見せれるのでは。	(I) can show a different one.
re-16	土曜日にゴミが捨てれるのでは。	I can throw away garbage on Saturdays.
re-17	ここでも電気がつけれるのでは。	I can turn on the lights.
re-18	向こうで円がドルに替えれるのでは。	You can change money over there.
re-19	近くでもタイ料理やベトナム料理が食べれるのでは。	(You) can eat Thai food and Vietnamese food around here.
re-20	綿密な計画が立てれるのでは。	I can make a detailed plan.
PRONOUN		
PROBABILISTIC: 僕・私		
Code	僕 test items	Meaning
prob_pro_01	それは僕の本だ。	That's my book.
prob_pro_02	僕のミスだった。	My mistake.
prob_pro_03	僕はテニスがうまいよ。	I'm keen on tennis.
prob_pro_04	いや、僕はスポーツが苦手だ。	I'm bad at sports.
prob_pro_05	僕の時計はどこにあるかな。	Where's my watch?
prob_pro_06	僕は週末釣りに行く。	I'm going fishing.
prob_pro_07	これは僕のノートだ。	That's my notebook.
prob_pro_08	僕は心配性だ。	I do a lot of worrying.
prob_pro_09	僕は大丈夫。	I'm okay.
prob_pro_10	僕はコメディが好きだ。	I like comedies.
Code	私 test items	Meaning
prob_pro_11	それはわたしの本だ。	That's my book.
prob_pro_12	わたしのミスだった。	My mistake.
prob_pro_13	わたしはテニスがうまいよ。	I'm keen on tennis.
prob_pro_14	いや、わたしはスポーツが苦手だ。	I'm bad at sports.
prob_pro_15	わたしの時計はどこにあるかな。	Where's my watch?
prob_pro_16	**わたし**は週末釣りに行く。	I'm going fishing.
prob_pro_17	これはわたしのノートね。	That's my notebook.
prob_pro_18	わたしは心配性ね。	I do a lot of worrying.
prob_pro_19	わたしは大丈夫。	I'm okay.
prob_pro_20	わたしはコメディ–が好きよ。	I like comedies.

(continued)

RANUKI Code	RANUKI test items	Meaning
DETERMINISTIC: おれ・あたし		
Code	俺 test items	Meaning
det_pro_01	俺、何歳に見えた?	How old do I look?
det_pro_02	俺に任せてください。	Let me handle this.
det_pro_03	俺をなめるなよ。	Don't make fun of me.
det_pro_04	俺は知らないよ。	I don't know.
det_pro_05	俺には意味が分からない。	It doesn't make sense to me.
det_pro_06	俺を忘れたの?	Have you forgotten about me?
det_pro_07	俺は渋谷で時計を買うつもり。	I'll buy a watch at the store.
det_pro_08	この箱は重すぎて俺には無理です。	This box is too heavy for me to carry.
det_pro_09	俺、夕食を作っておいたよ。	I cooked dinner.
det_pro_10	どうして俺?	Why me?
Code	あたし test items	Meaning
det_pro_11	あたし、何歳に見えた?	How old do I look?
det_pro_12	あたしに任せてください。	Let me handle this.
det_pro_13	あたしをなめるなよ。	Don't make fun of me.
det_pro_14	あたしは知らないよ。	I don't know.
det_pro_15	あたしには意味が分からない。	It doesn't make sense to me.
det_pro_16	あたしを忘れたの?	Have you forgotten about me?
det_pro_17	あたしは渋谷で時計を買うつもり。	I'll buy a watch at the store.
det_pro_18	この箱は重すぎてあたしには無理です。	This box is too heavy for me to carry.
det_pro_19	あたし、夕食を作っておいたよ。	I cooked dinner.
det_pro_20	どうしてあたし?	Why me?
SENTENCE FINAL PARTICLE		
PROBABILISTIC: んだ・わ		
Code	んだ test items	Meaning
prob_par_01	あれ、会議が始まるんだ。	Oh, the meeting is about to begin.
prob_par_02	元気がないんだ。	You look down.
prob_par_03	あら寝過ごしたんだ。	I overslept.
prob_par_04	知らないんだ。	I don't know.
prob_par_05	この箱、重いんだ。	This box is heavy.

(continued)

RANUKI Code	RANUKI test items	Meaning
prob_par_06	今、行くんだ。	I'm leaving.
prob_par_07	その靴がほしいんだ。	I want those shoes.
prob_par_08	あの和食が高いんだ。	The foods in Japanese restaurants are expensive.
prob_par_09	トムは日本に来るんだ。	Come here quickly.
prob_par_10	困ったんだ。	I don't know what to do now.
Code	わ test items	Meaning
prob_par_11	あれ、会議が始まるわ。	Oh, the meeting is about to begin.
prob_par_12	元気がないわ。	You look down.
prob_par_13	あら寝過ごしたわ。	I overslept.
prob_par_14	知らないわ。	I don't know.
prob_par_15	この箱、重いわ。	This box is heavy.
prob_par_16	今、行くわ。	I'm leaving.
prob_par_17	その靴がほしいわ。	I want those shoes.
prob_par_18	あの和食が高いわ。	The foods in Japanese restaurants are expensive.
prob_par_19	トムは日本に来るわ。	Come here quickly.
prob_par_20	困ったわ。	I don't know what to do now.
DETERMINISTIC: ぜ・わよ		
Code	ぜ test items	Meaning
det_par_01	すごくかっこいいの着ているぜ。	You're dressed really smart.
det_par_02	この焼き鳥おいしいぜ。	This yakitori is tasty.
det_par_03	バス、来なかったぜ。	The bus didn't come on time.
det_par_04	スキーに行くぜ。	Let's go skiing often.
det_par_05	今家にいるぜ。	Let's go home.
det_par_06	これから一生懸命やるぜ。	I will do my best from now on.
det_par_07	できるぜ。	You can do it.
det_par_08	いや、だって遠いぜ。	But it's far away.
det_par_09	想像以上に難しいぜ。	It's a lot more difficult than I imagined.
det_par_10	おかしいぜ。	This is strange!
Code	わよ test items	Meaning
det_par_11	すごくかっこいいの着ているわよ。	You're dressed really smart.
det_par_12	この焼き鳥おいしいわよ。	This yakitori is tasty.
det_par_13	バス、来なかったわよ。	The bus didn't come on time.
det_par_14	スキーに行くわよ。	Let's go skiing often.

(continued)

RANUKI Code	RANUKI test items	Meaning
det_par_15	今家にいるわよ。	Let's go home.
det_par_16	これから一生懸命やるわよ。	I will do my best from now on.
det_par_17	できるわよ。	You can do it.
det_par_18	いや、だって遠いわよ。	But it's far away.
det_par_19	想像以上に難しいわよ。	It's a lot more difficult than I imagined.
det_par_20	おかしいわよ。	This is strange!
LEXICAL		
Code	Male lexical control items	Meaning
lex_control-01	私の名は弥太郎。	My name is Yatarou.
lex_control-02	ネクタイを忘れてきたよ。	I forgot my necktie
lex_control-03	最近、彼女にイライラする。	She drives me mad.
lex_control-04	このプラモデルは掘り出し物だよ。	This plastic model is a bargain.
lex_control-05	私の髭剃り、どこにある？	Where is my electric shaver?
lex_control-06	ブリーフケースをネットで買った。	I bought a briefcase online.
lex_control-07	私はサラリーマン。	I'm a Salaryman.
lex_control-08	パチンコが好き。	I like pachinko.
lex_control-09	私は主夫。	I'm a house-husband.
lex_control-10	昨日床屋へ行った。	Yesterday I went to the barber.
Code	Female lexical control items	Meaning
lex_control-11	私の名は桜。	My name is Sakura.
lex_control-12	ネックレスを忘れてきたよ。	I forgot my necklace.
lex_control-13	最近、彼氏にイライラする。	He drives me mad.
lex_control-14	このドレスは掘り出し物だよ。	This dress is a bargain.
lex_control-15	私のブレスレット、どこにある？	Where is my bracelet?
lex_control-16	化粧品をネットで買った。	I bought makeup online.
lex_control-17	私はホステス。	I'm a hostess.
lex_control-18	買い物が好き。	I like shopping.
lex_control-19	私は主婦。	I'm a housewife.
lex_control-20	昨日美容院へ行った。	Yesterday I went to the hairdresser.

Pictures used in Experiment 2

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