Fortifying cuteness

Obstruent fortition and *Aegyo*

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The term *aegyo* refers to a cute style of speech in Korean with numerous reported phonetic correlates. One of these is obstruent fortition (OF). The present study examines the gender and age effects of OF across 21 romantic couples and across eight mock situations (date, workplace, family, comfort, date-planning, request, expression of love). Results revealed a significant interaction between *performance of aegyo* and *age*, such that younger participants exhibited higher rates of OF when performing *aegyo* than when not performing *aegyo*, whereas older participants did not. Results also revealed a *gender* effect such that women employed more OF than men, and a *situation* effect such that OF was more likely to occur in romantic situations, suggesting its indexicality of romantic intimacy.

Keywords: Korean sociophonetics, *aegyo*, obstruent fortition, *hyeo jjalbun sori*, short tongue sounds, sociophonetics, cute, gender, soft masculinity, sociolinguistics, variation

1. Introduction

Recent work in variationist sociolinguistics, what Eckert (2012) refers to as "the third-wave" of sociolinguistics, examines how linguistic variables acquire social meaning, and how these variables are taken up by speakers to agentively stylize their speech and construct a variety of social identities or 'personae' that they show to the world, marking a departure from the passive attention-to-speech model. A canonical example of this is Podesva (2007) who shows that a single speaker can utilize phonetic features to create different personae in different situations. Specifically, he shows that a medical student's use of falsetto is more frequent, longer in duration, higher in f0, and wider in f0 range at a barbeque with friends than when talking to his father or a patient. Podesva argues that this

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falsetto serves an expressive function and that said medical student specifically uses it at a barbeque with his friends to construct a diva persona.

Another example of linguistic variables being used to project social personae is found in Starr (2015), which demonstrates not only how one variable can be used for persona creation but how multiple variables can interact to create new social meaning. Specifically, she examines how different feminine personae are produced by voice actors employing 'sweet voice', a kind of breathy phonation, and Japanese women's language (JWL), a set of primarily morphosyntactic features that are ideologically associated with femininity in Japan. She shows that in Japanese anime, characters use sweet voice to portray sexualized yet lady-like, beautiful, older, supporting characters, who embody traditional Japanese femininity. Speakers who use sweet voice also always use JWL. However, characters who only use JWL but not sweet voice are portrayed as villainous spoiled brats, who, despite attempts to appear like sophisticated upper-class women, are ultimately construed as violent and uncouth. Thus, Starr (2015) argues that although JWL is used to create feminine personae, the specific persona created depends on whether or not it co-occurs with sweet voice. When sweet voice and JWL occur together, the projected persona is that of authentic traditional femininity, but when only JWL occurs, it is the affected femininity of a spoiled brat. The usage of sound to index gendered personae extends outside of Japanese to widely recognized cultural practices in other languages including Korean and the phenomenon of *aegyo*.

1.1 Aegyo

A*egyo* is a complex social phenomenon often defined as a display of cuteness composed of a "layered articulation of behaviors, gestures, vocal and linguistic adjustments, narratives and fashions that serve to enact child-like charm and infantilized cuteness" (Puzar & Hong, 2018, p. 333). For our purposes, we define it as a childlike speech register or style[1] that indexes cuteness (Jang, 2021).

Those who have studied *aegyo* generally point to it as being both a gendered practice and a linguistic tool used for accomplishing a number of goals, including asking for favors, maintaining social harmony, and gaining economic advance-

1. The concept of 'style' and 'register' are often conceptualized as separate phenomena in sociolinguistics. The former can be thought of as a collection of socially meaningful linguistic variables associated with a certain way of speaking (Eckert, 2005), while the latter can be thought of as "a way of speaking a language which is associated with a particular occupational or activity group" (Wardhaugh and Fuller, 2015, p. 415). However, a theoretical treatment of which category *aegyo* belongs to is beyond the scope of this paper.

ment (Manietta, 2015; Puzar & Hong, 2018; Moon, 2013). Moon (2013) describes *aegyo* in particular as a way for young women to perform femininity in a way that is different from traditional gender norms, or even, as a way of being assertive. But she argues that even though *aegyo* might represent a change in some ideals of womanhood, it still serves as "another form of confinement for women because it idealizes [their] submissive and dependent role in the normative gender order" (p. 4). Additionally, Starr, Wang, and Go (2020), who examine stance taking in Mandarin Autonomous Sensory Meridian Response[2] (ASMR), and sexy ASMR (S-ASMR) videos, also identify *aegyo*, and the similar Chinese *sajiao*, as a speech register in which a stance of "childish petulance" or whining is taken in order to construct a "girlfriend" persona. They find that ASMR and S-ASMR are entirely separate genres in several facets, including the set, actions, and sociophonetics of the performers. Particularly relevant here, is that they find the S-ASMR performances "to be roughly consistent with prior work on Chinese sajiao style and sexual affect among Japanese adult video performers", and that "performers constructed childish, petulant personae" and employed sets that "[index] youth and innocence in the performer, to distract from the reality that she is an experienced sex worker" (p. 506–507). These findings are also consistent with Han's (2016) arguments that *aegyo* is "an aesthetic that is flirtatious and cute, but still notionally sexually innocent" that is used in the Korean popular music (K-pop) industry to compete with "the hypersexualised world of Western pop without jeopardizing traditional South Korean values of propriety" (p. 15). That is, both S-ASMR performers and the K-pop industry are using their culture's "girlfriend" persona to maintain a veneer of innocence while still alluding to sexuality.

Given these descriptions, it is noteworthy that *aegyo* is a practice that men also participate in (Puzar & Hong, 2018). This is especially the case in the media where it aligns with a kind of "soft masculinity" that is celebrated in a South Korean context (Jung, 2011; Manietta, 2015). "Soft masculinity," according to Manietta (2015), "has certain features that are often associated with femininity, such as tenderness, politeness, and gentleness," yet still gives an "overall impression … of masculinity" (p. 9). That is, it is a "masculinity that has been reconstructed with some feminine aspects, but it has not been feminized" (Jung, 2011, p. 48). Manietta (2015) examines this alignment between *aegyo* and soft masculinity in the context of *aegyo* contests on the TV show "Weekly Idol," in which K-pop band members are asked to perform their best *aegyo*. He finds that members with

2. Starr, Wang, and Gao (2020) identify ASMR as "a tingling sensation prompted by soft voices and other stimuli" (p. 492). Videos designed to trigger ASMR have become popular in recent years on online video-sharing platforms with many consumers using ASMR videos to relax or as sleep aids.

more tough-guy or cool personae disalign with *aegyo* by showing reluctance to perform it and then performing it poorly, thus emphasizing their more canonical brands of masculinity. This is in contrast to members who embody soft masculinity and are able to align with *aegyo*, performing it skillfully and without reluctance because their image is not negatively affected by being further associated with femininity. Manietta (2015) argues that this shows that even though it is possible for men to perform *aegyo*, they only do so in the context of *aegyo*'s association with femininity.

Han (2016) looks at the "*aegyo* aesthetic" among performers of K-pop and sees its use in musical performances, specifically, as a "way of negotiating the hypersexualised world of Western pop without jeopardizing traditional South Korean values of propriety" (p. 15). She argues, however, that outside of performances, *aegyo* can be viewed as a means of "making a good impression and ensuring courteous behavior" from lower to higher ranking people in the [age-based] social hierarchy. This is especially true for the *maknae* (the youngest person in a K-pop group), to whom *aegyo* is so fully embedded that it "becomes symbolic of the hierarchy itself and all its associated codes of behavior" (p. 76). She also attributes the increased acceptance of male *aegyo* as being due to the increased economic / social power of women in recent decades (p. 85). This contrasts with Manietta's (2015) argument about *aegyo* being directly associated with femininity and likely points to *aegyo* as a linguistic form that gets its gendered meaning through a mediating indexical association (perhaps, politeness, as Han, 2016 proposes, rather than directly, as Ochs (1992) has pointed out for other supposedly gender indexing forms such as the Japanese sentence final particles 'ze' and 'wa').

Another view of *aegyo* offered by Jang (2021) and others is that rather than being directly associated with femininity, *aegyo* is a baby-talk register whose main purpose is to "sound cute like children to set up a temporal caregiver-caretaker relationship" between the speaker and interlocutor (p. 21). That is, rather than being associated with femininity, it is associated with childishness and immaturity (Moon, 2018). Looking at *aegyo* through this lens, we can view it as a form of *age stylization*, parallel to Coupland's (2001) dialect stylization, in which speakers call on linguistic resources associated with young children to perform a persona which indicates that they are in need of care and attention. However, given this complex weave of personae and gender dynamics, it is likely that *aegyo* has a complex indexical field (Eckert, 2008) associated with a variety of personae, identities, and stances that form a rich tapestry of resources available to speakers of Korean.

Strong (2012) investigates whether there is any significant difference between the prosody of *aegyo* and non-*aegyo* speech. To do so, she constructed two role-plays, each consisting of a passage describing a phone call between a girlfriend and boyfriend with a preceding scenario. In one of the scenarios, the girlfriend,

Seong-hwe, is "described as someone who lacks *aegyo* and does not display a cute side to others" while the other, Young-mi, is "described as someone who loves cute things, behaves cutely to her boyfriend, and frequently acts in a cute manner" (Strong, 2012, p. 32). The sentences that were targeted for analysis were nearly identical except Young-mi's speech had added descriptors designed to elicit *aegyo* without actually using the word *aegyo* anywhere in the prompts, e.g., Young-mi is described as saying she wants to eat ice cream in a childlike voice, while Seong-hwe is merely described as saying she wants to eat ice cream. Three participants were then asked to read the passages "in an entertaining manner, as though they were reading to a friend or family member" (Strong, 2012, p. 34). Their speech during the targeted sentences was then compared between the passages for mean absolute pitch slope, pitch range, mean pitch, and boundary tone type. Of these, only mean pitch was significantly different for two of the three subjects. However, it is important to point out that this analysis is potentially problematic in that, by not directly mentioning the term *aegyo*, Strong (2012) may not have been targeting the properties of the speech style, but rather the properties of the descriptors she used for Young-mi. Thus, we have no way of knowing if the pitch differences she found are reflective of *aegyo* or some other characteristic like childlikeness. Moon (2013) also looks at phonetic features of *aegyo*, identifying the elements most strongly associated with it ideologically as rising-falling intonation (LHL%), the lexical item *oppa* 'older brother', nasality, and *hyeo jjalbun sori* (HJS) 'short tongue sounds', and illustrates each with examples from the media. In Moon (2017) and Moon (2018), she examines the first of these elements, the LHL% boundary tone, and determines it to be a feature with a wide range of stylistic usages that are not limited to only *aegyo*. She and Brown (2017) both argue that *oppa* is used in *aegyo* because the term is used to create a romantic fantasy, indexing the traditionally ideal romantic relationship between a younger woman and older man. This contrasts with the term *nwuna*, used by a younger man to an older woman, which until recently did not share the same romantic connotations. Brown (2017) points out this is likely due to a taboo against the woman being the older member of the couple (known as *yensang-yenha*), which

> appears to be linked to traditional Confucian-based practices, which emphasize age as the ubiquitous factor for determining social hierarchy, and which perpetuate patriarchal family practices whereby the eldest male was the head of the family. *Yensang-yenha* marriages would challenge the status quo of patriarchal family relationships, since the husband would be younger than the wife. (p. 3)

Holliday and Kong (2018) use an attitudes survey to examine another linguistic component of *aegyo*: "short tongue sounds". Here they note many pronunciations associated with them, specifically stopping (e.g., /s̪/ as /t̪/), affricating (e.g., /s̪/

as /t͡ɕ̈/), fronting of coronal fricatives (i.e., /s/ and /s̈/ as [θ]), and tensing (e.g., /s/ as [s̻]), and many gendered beliefs about these pronunciations: women are perceived to use stopping and affricating more than men who prefer fronting; and women are perceived to use "short tongue" pronunciation by choice, while men who use it are more likely to be perceived as having a speech impediment. Finally, Jang (2021) looks at the connection between *aegyo* and orthographic representations of /j/-insertion and obstruent fortition (OF), defined as the stopping of coronal affricates and fricatives and the affrication of coronal fricatives, as in (1). She reports that more phonotactically natural representations of *aegyo* (e.g., [t͡ɕj] being favored over [tj,] because /j/ typically triggers palatalization of stops in Korea) are favored in tweets, and that women and older speakers are more sensitive to differences in the amount of cuteness between different *aegyo* variants.

(1) Obstruent Fortition (OF)
   a. Coronal fricative affrication: haesseo → haejjeo 'did'
   b. Affricate stopping: hajima → hadima 'don't do it'
   c. Coronal fricative stopping: haesseo → haejjeo → haeddeo 'did'

(Moon, 2013, p. 16)

This still leaves quite a bit of room to probe the indexical field, especially at the segmental and production levels. One of the most salient features of *aegyo* is the aforementioned OF along with related consonantal features, such as coronal fricative fronting (e.g., /s/->[θ]), (i.e., the aforementioned HJS). Moon (2013) argues that HJS's "periodic appearance … is interpreted as the speaker's attempt to sound cute and childlike, through its resemblance to a baby's pronunciation tendency," (p. 15). Given this relationship between HJS and *aegyo*, an examination of HJS, specifically obstruent fortition, as a component of *aegyo* is warranted.

In connection with *aegyo* and HJS being an expressive performance, another social factor that may predict HJS' occurrence is region. In South Korea, stereotypes are prevalent surrounding people from different regions. Relevant here is the stereotype of men from the *Gyeongsangdo* (southeastern) region. Gyeongsangdo men are stereotyped as being blunt and cold (*muddukddukhata)* to the point that they are reported to only say three things when getting home, "let's eat", "how are the kids?", and "let's go to bed" (YTN, 2015; Kim, 2019). Given that *aegyo* is a highly expressive form of stance-taking, male speakers from *Gyeongsangdo* may be expected to employ features of *aegyo* such as OF significantly less often than other speakers.

1.2 Obstruent fortition in *aegyo*

The current study focuses on the realization of HJS in *aegyo*, specifically OF. Moon (2013) identifies the primary phonological feature of HJS as the fortition of fricatives and affricates, as in (2), pointing out that it typically occurs with the tense fricative, [s͈],[3] due to its frequent use in Korean verbal conjugations (e.g., the past tense marker /-ʌs͈-/, the modal particle /-kes͈-/ and the existential marker /is͈-/).

(2) Phonological process of *hyeo jjalbun sori*
   a. [s/s͈] → [tɕ/tɕ͈]: haesseo → haejjeo 'did'
   b. [tɕ/tɕ͈] → [t/t͈]: hajima → hadima 'don't do it'
   c. [s/s͈] → [t/t͈]: haesseo → haejjeo → haeddeo 'did'

(Moon, 2013, p. 16)[4]

Moon (2013) also notes it can apply to lax [s] and to both tense [tɕ͈] and lax [tɕ] affricates, but she does not discuss whether it can apply to aspirated affricates [tɕʰ]. In the present study, the stopping of [tɕʰ] accounted for four out of 326 instances of fortition; an analysis of phonation type and fortition will be left to future research.

Despite research on the perception of HJS, an investigation of the linguistic and social constraints (beyond the description of its gendered use) has not yet been reported in the literature. This study attempts to fill this gap via an examination of production data in obstruent fortition to determine how it is socially conditioned.

1.3 Research questions

The present research seeks to answer the following research questions:

1. Does obstruent fortition depend on style?
   a. Hypothesis: Moon (2013) and Jang (2021) describe OF as a property of *aegyo*, thus OF is expected to increase when *aegyo* is explicitly requested.

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3. The double line below the 's' and other symbols on this page indicate a "tense" (a.k.a., 'fortis') obstruent. The precise articulation of these obstruents depends on the manner of articulation but in general are characterized by having little aspiration, high pressure, and a high fundamental frequency on the following vowel. An apostrophe is also sometimes used to indicate the tense series of obstruents, but this is a non-standard use of the symbol as these sounds are not ejectives (Shin, Kaier, & Cha 2012; Shin 2015).

4. Although there are other phonological processes that are regarded as *HJS* besides just OF, e.g., /j/-insertion, the rounding of vowels, and the fronting of fricatives (Moon, 2013; Holliday & Kong, 2018; Jang, 2021), only fortition will be examined in this paper.

   b. Hypothesis: Moon (2013) describes aegyo as a conscious manipulation, thus OF is expected to increase as both attention to speech increases and *aegyo* is explicitly requested.

2. Does obstruent fortition depend on the situation and/or role being played by the participant?
   a. Hypothesis: *Aegyo* is generally described as an intimate style (Moon, 2013; Moon, 2018), thus as intimacy between interlocutors increases, OF is expected to increase (lovers > parent/child > college friends > boss/employee).
   b. Hypothesis: Han (2016) and Puzar and Hong (2018) describe *aegyo* as a form of deference/politeness to those higher in the social hierarchy, thus roles with less power are expected to employ OF more often (requester > requestee, child > parent, employee > boss).

3. Does the rate of occurrence of OF in *aegyo* performances depend on the gender of the speaker?
   a. Hypothesis: Because *aegyo* is commonly associated with fortition and is generally identified as a gendered practice (Manietta, 2015; Moon, 2017; Puzar & Hong, 2018; Moon, 2013; Jang, 2021), it is expected that female speakers will show more fortition than male speakers.

4. Does the rate of occurrence of OF in *aegyo* performances depend on the age of the speaker or the difference in age between romantic partners?
   a. Hypothesis: Because Puzar and Hong (2018) identify *aegyo* as a practice performed by young people, it is expected that younger people will produce more fortition than older speakers.
   b. Hypothesis: Han (2016) and Puzar and Hong (2018) describe *aegyo* as a form of deference/politeness to those higher in the social hierarchy, thus the younger a speaker is relative to their interlocutor, the more OF they are expected to employ.

5. Does the rate of occurrence of OF in *aegyo* performances depend on the region the speaker is from?
   a. Hypothesis: Since, there are regional stereotypes in which men from the Gyeongsangdo region are seen as being emotionally inexpressive, it is expected that they will produce less fortition than those from other regions.

2. Methods

2.1 Participants

Forty-two participants, born between 1953 and 1996, were recruited using snowball sampling in the metropolitan areas of Seoul and Busan (the most populated city in the *Gyeongsangdo* region), South Korea. Three speakers living in *Chungcheongdo*, located near the Seoul metropolitan region, were also recruited. All speakers were L1 speakers of Korean, raised and educated in the Republic of Korea. Speakers were recruited as self-identified romantic pairs to facilitate the use of a relatively intimate style, which was predicted to be more likely to be successfully performed with a romantic partner than with an unfamiliar person/researcher. Participants were roughly balanced for self-identified gender (21 women, 21 men), age (18 born before 1980, 24 born after 1980), and region (18 raised in *Gyeongsangdo*, 22 raised in other regions).[5] The age factor used 1980 as a cutoff point because the participants patterned evenly on either side of this date: no participant was born between 1973 and 1985; 1980 was reached by splitting the difference between these two boundary years. When running our models, we also tested *decade* as a categorical variable and *year of birth* as a continuous variable, but binary birth year (before/after 1980) provided the best operationalization according to model fit (see Table 1 for further demographic details). All participants were recorded using the online conferencing software Zoom via any device that supported it (i.e., laptops, desktops, smartphones, and tablets). In addition to the 22 couples analyzed here, two other couples were originally interviewed, but they used Zoom's phone call function which does not record frequencies above 4300 Hz. Accordingly, these speakers' data had to be excluded from the analysis because sibilant fricatives and sibilant-containing affricates often have their mean peak frequency between 3500–10000 Hz, well above the threshold, depending on their anteriority (Johnson, 2011). Additionally, one of the two excluded couples initially recorded their interview at their place of work. Once they were requested to perform *aegyo* they asked if they could finish the recording at home to avoid embarrassment in front of their employees.[6]

5. See Appendix A for more details on the participants' identities.

6. For future researchers wishing to use Zoom, we suggest disabling Zoom's phone call function, especially when interviewing speakers not familiar with the platform and emphasizing that recording should take place in a private quiet location to avoid the issues that led to the exclusion of participants in the current study.

Table 1. Participant demographics

Region raised	Born before 1980	Born after 1980
Gyeongsangdo (individuals)	4 women	3 women
	6 men	5 men
Seoul metro region (individuals)	2 women	6 women
	1 man	5 men
Other* (individuals)	3 women	3 women
	2 men	2 men
Both members from *Gyeongsangdo*	4 couples	2 couples
Both members from Seoul Metro	1 couple	5 couples
Both members from another region	2 couples	1 couple
Mixed *Gyeonsangdo* and Seoul metro couple	1 couple	2 couples
Mixed *Gyeonsangdo* and other region Couples	1 couple	1 couple
Mixed Seoul and other region couple	0 couples	2 couples

* 'Other' is composed of two participants from *Jeolla* (southwestern South Korea), four participants from *Chungcheong* (west-central South Korea), and four participants from *Gangwon* (northeastern South Korea)

2.2 Stimuli

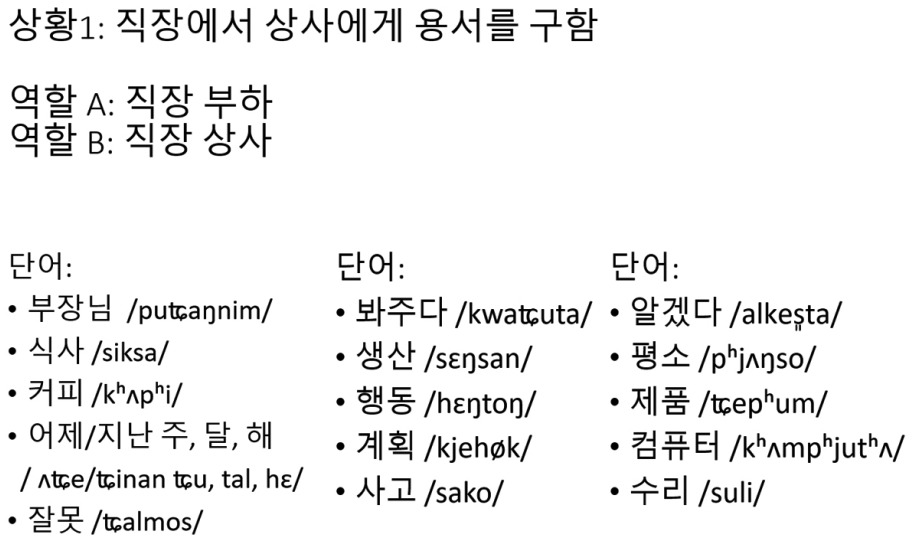
The stimuli consisted of a scripted dialogue (script), four roleplays (RP) and three communicative tasks (CT).

The scripted dialogue presented a couple planning and going on a date (script), that consisted of roughly 250 target words, which were included to ensure a variety of affricates and fricatives of various phonation types (lax, tense, aspirated). The scripted dialogue was proofread by a 29-year-old native speaker of Seoul Korean to ensure naturalness. The couple was asked to read through the scripted dialogue twice, switching roles after the first time.[7]

In the roleplay task, the couple was given a situation, a role, and 15 words to attempt to use in the roleplay. The words consisted of 10 words containing one or more target segments and 5 distractors. The situations presented in the roleplays were: asking forgiveness from a boss (boss, employee), a junior classmate at college (*hubae*) asking a senior classmate (*seonbae*) to buy lunch (senior classmate, junior classmate), asking a parent for permission to do something (parent, child), and comforting a partner (comforter, comfortee). After completing the four role-

7. The woman was asked to perform role A first to ensure consistency across couples and in order to be able to make reference to gender in the instruction slides.

plays, the couple was asked to switch roles and repeat them. None of the roles or texts that support them were written to be gendered in any way (e.g., by employing gendered language). A sample slide is presented in Figure 1.



a. Roleplaying slide sample: Korean version with IPA added (not in original)

Situation 1: Asking forgiveness of your boss

Role A: Employee
Role B: Boss

Words:	Words:	Words:
– Department head	– Forgive	– Understand
– Meal	– Production	– Usual
– Coffee	– Behavior	– Product
– Yesterday/Last week, month, year	– Plan	– Computer
– Mistake	– Accident	– Repair

b. Roleplaying slide sample: English translation of 1a

Figure 1.

Finally, the three communicative tasks were presented together on one slide, as in Figure 2, and consisted of planning a date, requesting something, and expressing love.[8]

- 부분 1: 애인 또는 배우자와 함께 기념일 데이트를 계획하세요. (3분 정도 해주세요)
  - 실제 상황이 아니어도 됨
- 부분2: 애인 또는 배우자한테 무엇인가 부탁해주세요.
  - 실제 상황이 아니어도 됨
- 부분3: 애인이나 배우자에게 말로 사랑한다는 것을 표현해주세요.

a. Communicative tasks slide: Original Korean version

- Part 1: Please plan a date with your lover/spouse. (for about 3 minutes)
  - This does not need to be a real situation
- Part 2: Please request something of your lover/spouse
  - This does not need to be a real situation
- Part 3: Please express your love in words for your lover/spouse

b. Communicative tasks slide: English translation of 2a

Figure 2.

2.3 Procedure

The task was presented to participants through screenshare via the online conferencing software Zoom, due to the restrictions of meeting participants in person at the time of recording. Data was audio recorded with Zoom's default setting in .m4a at a sampling rate of 24K Hz and then converted to .wav. Participants were requested to participate in the experiment in a quiet room with their partner and

8. For the requesting section, couples often only performed the request unidirectionally as bidirectionality was not explicitly requested in the instructions.

were allowed to use whatever device they had available for the recording.[9] The tasks were self-paced. Participants were asked to read through each section[10] of the dialogue and the instructions for each one before performing them. Participants were asked to perform the full dialogue once, then to do it again, switching roles. They were then asked to perform the four dialogues once each and then again, by switching roles. The communicative tasks were then displayed all at once with participants completing them at a self-controlled pace. Finally, the participants were asked to repeat all of the above tasks again while performing *aegyo*, instructed on the slide as "과제1–3을 다시 진행하는데, 이번에는 대화에 애교를 넣어서 해주세요" ('We will do tasks one to three again, but this time please insert aegyo into the dialogue').

2.4 Measurements

The manner of obstruent articulation was determined using spectrograms from Praat (Boersma & Weenink, 2021), via the presence of stop closures (stops), as in Figure 3, frication (fricatives), as in Figure 4, or a combination thereof (affricates), as in Figure 5, for the underlying sounds /s/, /s̻/, /tɕ/, /t͡ɕ/ and /tɕʰ/. The sounds undergoing fortition were all sibilants and thus a viewing window of 0–9000 Hz was used rather than Praat's default window of 0–5000 Hz. This expanded viewing range was chosen because sibilants show high energy frication noise well above that of other speech sounds (Johnson, 2011; Ladefoged and Johnson, 2010; Johnson, 2011). Often the stops had friction noise following the stop closure; in this case, the token was determined to be an affricate if there was significant friction energy below 2000 Hz immediately following release of the closure. The cut-off was chosen because the frication of sibilant noise is concentrated above 2500 Hz and a lower cut-off allows for a conservative delineation between sibilant frication and aspiration (Ladefoged & Johnson, 2010; Johnson, 2011).

Tokens were coded as fortified if the manner was less sonorous than the expected standard Korean variant,[11] as in Figure 3. Lax affricates were often found to lenite as fricatives (Schertz, Kang, Kochetov, Kong, & S. Han, 2015). These

9. Couples did not always follow this instruction and on occasion performed the dialogue at work, in front of family members, or at cafes. However, the researcher did not require the researchers to turn their cameras on nor did he ask them their location, so the effect of this would be difficult to test.

10. The dialogue was divided into six sections for ease of presentation on a computer screen. The sections were divided based on the couples' location during a date.

11. The standard Korean variant was taken to be the variant(s) reflected in the orthography given by the 국립국어원 표준어대사전 [National Institute of Korean Language's Unabridged Standard Korean Dictionary].

were all coded as fricatives, but since fricatives are not an instance of fortition, they did not enter into any statistical calculation. Although it has been shown that Zoom stretches the spectral space of sibilants compared to in-person recordings, this method remains valid for the visual detection of frication following stops on the spectrogram (Calder & Wheeler, 2022).

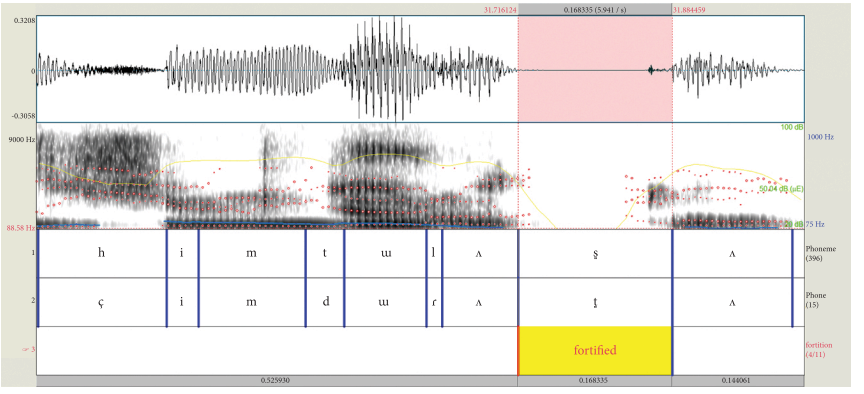


Figure 3. Fortified [ʈ̈] realization of /ʂ̈/ from speaker 30M94 in /himtɯlʌʂ̈ʌ/ 'was difficult' (stop)

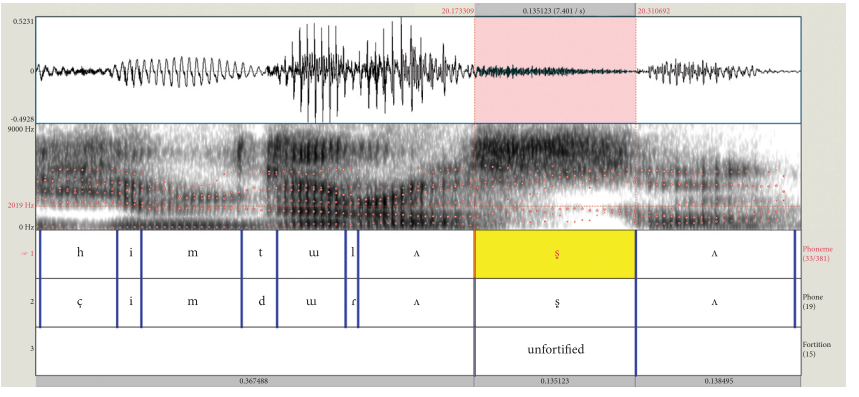


Figure 4. Unfortified /ʂ̈/ from speaker 30M94 in /himtɯlʌʂ̈ʌ/ 'was difficult' (fricative)

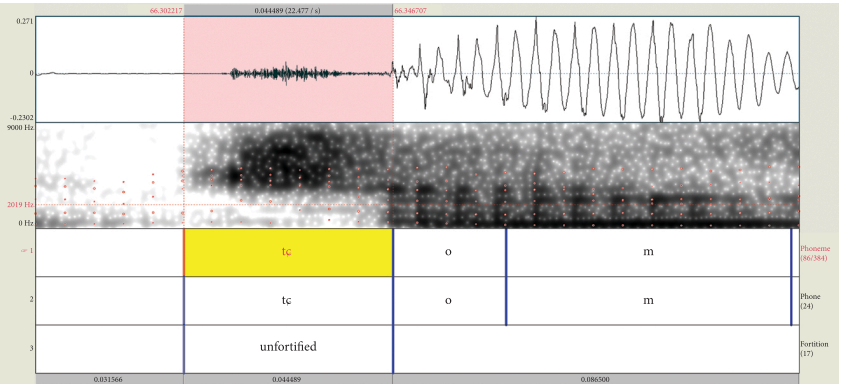


Figure 5. Unfortified /tɕ/ from speaker 30M94 in /tɕom/ 'a little' (affricate)

2.5 Statistical analysis

A mixed-effects logistic regression model with binary *presence/absence of fortition* as the dependent variable and participant and lemma as random effects was built to determine which factors condition the occurrence of OF in Korean. Potential independent variables were *performance of aegyo* (yes/no), *attention to speech* (script, role-play, communicative task), *situation* (date, workplace, school, family, comfort, date-planning, request, love), *role* (script role A, script role B, boss, employee, senior at college, college junior at college, parent, child, comforter, comfortee, date-planner, requester, requestee, love-expresser), *gender* (men/women), *age group* (year of birth before/after 1980), continuous *year-of-birth, decade of birth* (1950s, 1960s + 1973,[12] 1980s, 1990s), *region raised* (Gyeongsangdo/other), *age difference with partner (continuous)*, *categorical age status relative to partner* (younger, same, older) and *underlying manner of articulation* (affricate, fricative). Interactions between all variables were tested except for different operationalizations of *age* and *task, situation, and role*s. These variables were interchanged with each other when testing models. The model with the lowest AIC was then selected for each model category, unless there were multiple models with similar AICs, in which case the one with more meaningful and interpretable results was selected. The model was computed using the glmer() of the *lmerTest* package (Kuzentsova, Brockhoff & Christensen, 2017) in the statistical tool R (R Core Team, 2018).

12. Only one participant was born in the 1970s and was thus grouped with those born in the 1960s.

3. Results

3.1 Descriptive results

The overall results for the experiment testing stylistic factors are displayed in Table 2. Of particular note is that the percentage of fortified tokens increases by 5.522 times from the non-*aegyo* to the *aegyo* condition, and that it roughly doubles from the script style to the roleplay style and then again from the roleplay style to the communicative tasks (CT) style. We can see that, in general, fortition is a fairly rare occurrence, occurring at 2.5% or less for all cells, with the exception of the love situation and love-expresser role, where it occurs at more than 10%.

Table 2. Experimental results: Stylistic factors

Factor	Level	Unfortified (#)	Fortified (#)	Fortified (%)
Condition:	non-*aegyo*	14263	69	0.481
	aegyo	13583	257	1.857
Manner of articulation (underlying)	fricative	12619	125	0.981
	non-aegyo	*6474*	*24*	*0.369*
	aegyo	*6145*	*101*	*1.617*
	affricate	15227	201	1.303
	non-aegyo	*7789*	*45*	*0.574*
	aegyo	*7438*	*156*	*2.054*
Style	script	12063	112	0.920
	roleplay (RP)	12895	139	1.066
	communicative task (CT)	2888	75	2.531
Situation (script)	Date	12063	112	0.920
Situation (RP)	Work	3616	21	0.577
	School	3015	40	1.309
	Family	3099	21	0.673
	Comfort	3165	57	1.769
Situation (CT)	Date-planning	1323	28	2.073
	Request	1046	18	1.692
	Love	519	29	5.292

Table 2. *(continued)*

Factor	Level	Unfortified (#)	Fortified (#)	Fortified (%)
Role	Lover A	6088	64	1.040
	Lover B	5975	48	0.797
	Boss	1254	4	0.318
	Employee	2352	17	0.718
	Senior Student	1267	15	1.170
	Junior Student	1734	24	1.365
	Parent	1190	14	1.116
	Child	1896	7	0.368
	Comforted	1673	27	1.588
	Comforter	1529	31	1.987
	Date-planner	1323	28	2.073
	Requester	701	10	1.406
	Requestee	345	8	2.266
	Love-expresser	519	29	5.292

The overall results for the experiment examining social-identity factors are displayed in Table 3. Here we can see that, as predicted, women employ fortition (OF) at a higher rate than men, and younger speakers employ fortition at a higher rate than older speakers.

Table 3. Experimental results: Social identity factors

Factor	Level	Unfortified (#)	Fortified (#)	Fortified (%)
Gender	Women	13148	230	1.719
	Men	14698	96	0.649
Age group	Before 1980	10546	27	0.255
	After 1980	17300	299	1.699
Decade of birth	1950s	3662	11	0.299
	1960s + 1973	6884	16	0.232
	1980s	5492	55	0.992
	1990s	11808	244	2.025

Table 3. *(continued)*

Factor	Level	Unfortified (#)	Fortified (#)	Fortified (%)
Age relative to partner	Younger	12045	140	1.145
	Same age	3115	98	3.050
	Older	12686	88	0.689
Region raised	Gyeongsang	11551	94	0.807
	Male	*7234*	*57*	*0.782*
	Female	*4317*	*37*	*0.850*
	Other	16295	232	1.404
	Male	*7464*	*39*	*0.520*
	Female	*8831*	*193*	*2.139*

A breakdown of tokens by fortition type for a selection of stylistic and identity factors is displayed in Table 4. Here we see that of the three types of fortition under examination, affricate stopping is the most common across stylistic and social factors. The social, phonological, and lexical reasons for this are beyond the scope of the current study.

Table 4. Experimental results: Fortification type

Factor	Level	Unfortified fricatives (#)	Unfortified affricates (#)	Affricated fricatives (#)	Stopped fricatives (#)	Stopped affricates (#)
Condition	non-*aegyo*	6474 (45.172%)	7789 (54.347%)	10 (0.0698%)	14 (0.0977%)	45 (0.314%)
	aegyo	6145 (44.400%)	7438 (53.743%)	40 (0.289%)	61 (0.441%)	156 (1.127%)
Task	Script	5508 (45.240%)	6555 (53.840%)	19 (0.156%)	35 (0.287%)	58 (0.476%)
	Roleplay	5846 (44.852%)	7049 (54.081%)	25 (0.192%)	28 (0.215%)	86 (0.660%)
	Communicative tasks	1265 (42.693%)	1623 (54.776%)	6 (0.202%)	12 (0.405%)	57 (1.924%)
Gender	Women	6025 (45.037%)	7123 (53.244%)	31 (0.232%)	50 (0.374%)	149 (1.113%)
	Men	6594 (44.572%)	8104 (54.779%)	19 (0.128%)	25 (0.169%)	52 (0.351%)

Table 4. *(continued)*

Factor	Level	Unfortified fricatives (#)	Unfortified affricates (#)	Affricated fricatives (#)	Stopped fricatives (#)	Stopped affricates (#)
Age	1980+	7782 (44.128%)	9518 (54.083%)	42 (0.239%)	74 (0.420%)	183 (1.040%)
	1980–	4837 (45.749%)	5709 (54.083%)	8 (0.0756%)	1 (0.00946%)	18 (0.170%)
Region raised	*Gyeongsang-do*	7392 (44.727%)	8903 (53.869%)	38 (0.230%)	59 (0.357%)	135 (0.817%)
	Other	5227 (44.886%)	6324 (54.307%)	12 (0.103%)	16 (0.137%)	66 (0.567%)

3.2 Statistical results

3.2.1 *Statistical model*

The optimal model, displayed in Table 5, revealed a main effect for *performance of aegyo* ($p = 0.000623$) such that obstruent fortition was 8.609 times more likely to occur in explicitly requested performances of *aegyo* than when *aegyo* was not explicitly requested (i.e., when participants were not given any stylistic instruction on how to complete the task). It also revealed a main interaction for *situation*, as visualized in Figure 6, such that fortition was 4.191 times more likely in the comfort situation ($p = 0.0307$), 4.637 times more likely in the plan situation ($p = 0.0347^{*}$), and 6.529 times more likely in the love situation ($p = < 0.0114$) than in the default work situation. There was also a significant main effect for *age group*, such that speakers born before 1980 were 76.2% times less likely to employ fortition than those born after 1980 ($p = 0.0215$), and a main effect for *gender*, as visualized in Figure 7, such than men were 57.8% less likely to employ fortition than women ($p = 0.0482$). The model also revealed a significant interaction between *performance of aegyo* and *age group*, as visualized in Figure 8, such that those born after 1980 increased their use of fortition when explicitly asked to perform *aegyo* significantly more than those born before 1980 ($p = 0.00665$). Finally, there was a significant interaction between *region raised* and *manner of articulation*, as visualized in Figure 9, such that speakers from *Gyeongsangdo* were significantly more likely to fortify affricates than speakers from other regions ($p = 0.0212$).

Table 5. Optimal model

	Odds ratio	Lower CI	Upper CI	P-values
Intercept	0.000738	0.000189	0.00288	<0.0001****
Aegyo: performed	8.609	2.508	29.549	= 0.000623***
Situation: date*****	2.748	0.813	9.283	= 0.104
Situation: college	1.444	0.313	9.283	= 0.638
Situation: parent	2.174	0.503	9.385	= 0.298
Situation: comfort	4.191	1.142	15.374	= 0.0307*
Situation: plan	4.637	1.116	19.257	= 0.0347*
Situation: request	2.167	0.349	13.458	= 0.406
Situation: love	6.529	1.525	27.951	= 0.0114*
Age Group: YoB before 1980	0.238	0.0697	0.809	= 0.0215*
Gender: men	0.422	0.179	0.993	= 0.0482*
Region raised: *Gyeongsangdo*	0.953	0.415	2.184	= 0.910
Manner of articulation: affricate	0.998	0.615	1.621	= 0.995
Aegyo: performed*Situation: date	0.390	0.106	1.439	= 0.158
Aegyo: performed*Situation: college	1.826	0.359	9.286	= 0.468
Aegyo: performed*Situation: parent	0.457	0.0915	2.280	= 0.339
Aegyo: performed*Situation: comfort	0.522	0.128	2.123	= 0.364
Aegyo: performed*Situation: plan	0.724	0.151	3.472	= 0.686
Aegyo: performed*Situation: request	1.005	0.141	7.189	= 0.996
Aegyo: performed*Situation: love	0.786	0.158	3.907	= 0.769
Aegyo: performed*Age: YoB before 1980	0.314	0.136	0.725	= 0.00665**
Age: YoB before 1980*Gender: men	3.170	0.711	14.133	= 0.130
Region raised: *Gyeongsangdo** Manner of articulation: affricate	1.903	1.101	3.290	= 0.0212*

Note. Model Formula: Fortition ~ Aegyo*Situation + Aegyo*Age Group + Gender*Age Group + Region Raised*Underlying Manner of Articulation + (1|Participant) + (1|Lemma)
Note.
***** The 'work' situation was used as the reference value for the *situation* factor, because 'work' was the situation that elicited the most formal speech and was also the situation with the lowest rate of fortition.
**** = $p < 0.0001$ *** = $p < 0.001$ ** = $p < 0.01$ * = $p < 0.05$
non-significant interactions omitted

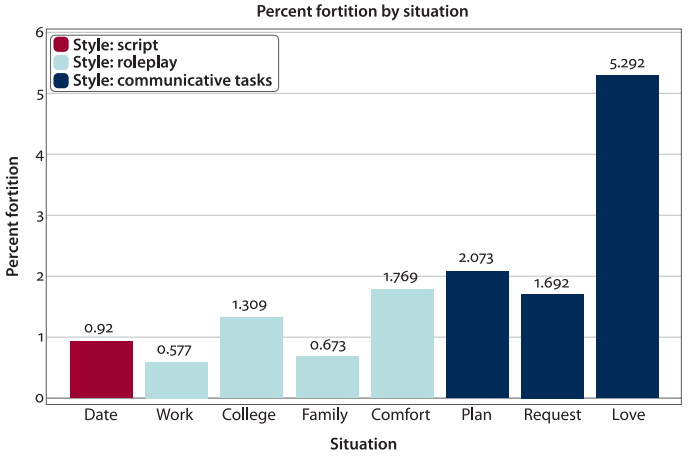


Figure 6. Percentage fortition by situation

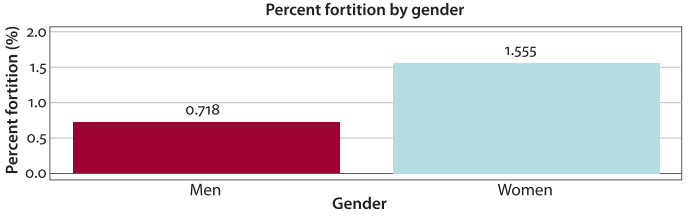


Figure 7. Percentage fortition by gender

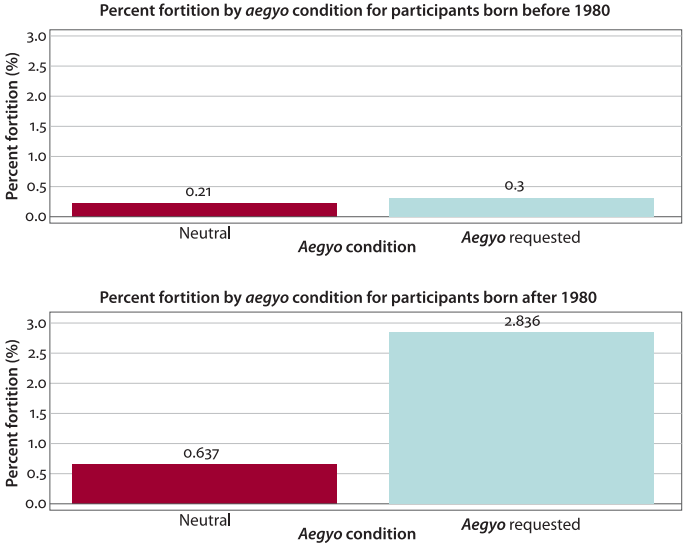


Figure 8. Percentage fortition for age group by *aegyo* condition

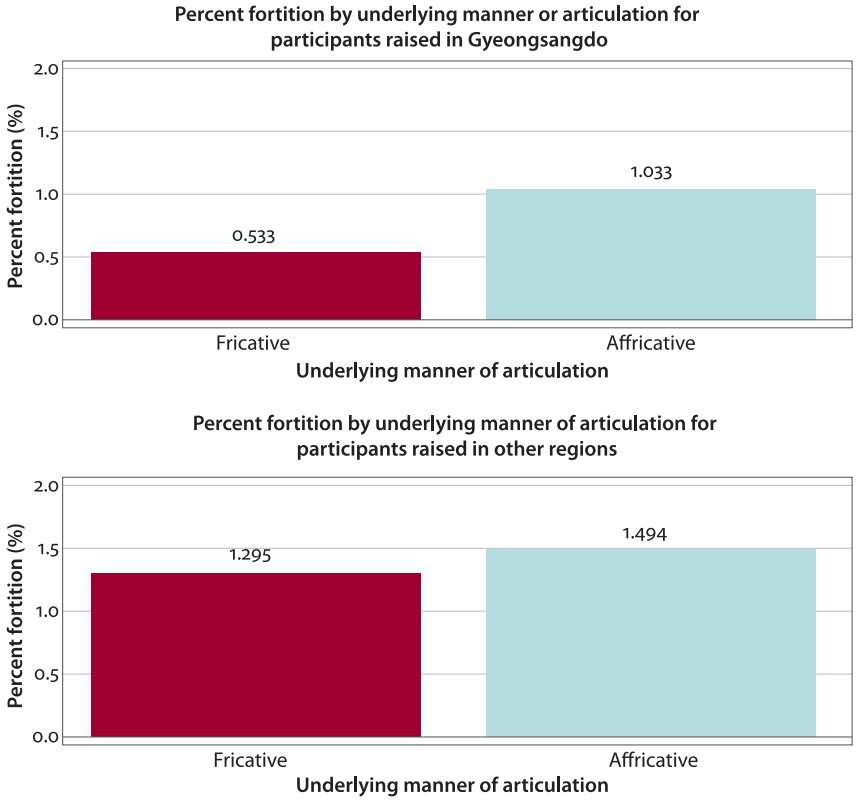


Figure 9. Percentage fortition for region raised and underlying manner of articulation

3.3 Lexical effects

The last detail to take note of is the presence of a lexical effect in which lemmas related to romance and emotions exhibited higher rates of fortition. In particular, words like /tɕaki/ 'honey', /salaŋ/ 'love' and emotion, e.g., /tɕoh-/ 'to be good' (used to accept an invitation or request) and /soksaŋha-/ 'to be upset' in this data set were both more likely to fortify and made up a large percentage of the number of fortitions in the sample. Curiously, the past tense suffix, /-ʌs̬-/ also patterned with these words in exhibiting high rates of fortition. This may be because the past tense often occurs intonation-phrase finally and, according to Moon (2017), this position is a site of particular importance in Korean in which "regardless of any grammatical or contextual conditions, pragmatic and social meanings are heavily conveyed" (p. 3), due to several language-specific factors, including this being the site where intonational pragmatic meanings are communicated. Table 6 displays

all words/suffixes that contained both more than two percent of total fortitions and two percent of fortitions or more within that lemma.[13]

Table 6. Percentage fortition by lemma (lexical items)/morpheme (affix)

Underlying form	Gloss	Fortitions	% of total fortitions	% of lemma/inflectional suffix fortition
/tɕaki/	'honey'	67	20.6%	8.579%
/-ʌs̈-/	past tense morpheme	30	9.20%	2.918%
/tɕoh-/	'to be good'	15	4.60%	2.683%
/soksaŋha-/*	'to be upset'	14	4.29%	4.297%
/salaŋ/	'love'	12	3.58%	3.150%
/tɕosimha-/**	'to be careful'	10	3.07%	3.472%
Other		179	54.6%	NA
Total		**326**	**100%**	

* The first /s/ of /soksaŋha-/ comprised eleven of the fourteen fortitions and the second /s/ which is realized in non-HJS as /s̈/ comprised the other three fortitions.
** The /tɕ/ of /tɕosimha-/ comprised seven of the ten fortiitions and the /s/ comprised three of them.

4. Discussion

The marked increase in rate of OF occurrence after participants were asked to perform *aegyo* provides experimental evidence that OF is indeed a component of *aegyo*. This observation accords with Moon (2013) and Jang (2021) who argue that OF is a component of *aegyo*. The trending interaction between *age group* and *aegyo* condition also suggests that older speakers and younger speakers respond differently when being asked to perform *aegyo*.

13. The rightmost column in Table 8 is thanks to the kind suggestion of a reviewer, who rightly points out that the percent of the lemma/inflection suffix being fortified is important in determining if there is a lexical effect. The reason for the double cutoff point in the table is that there are highly infrequent words in the data that do have a very high rate of fortition but that are also very infrequent, rendering them difficult to use in ascertaining the indexical meaning of OF. Such words includes /tɕatɕʌn/ 'rotation', which only occurs in the data once but has both of its /tɕ/'s fortified (a fortition rate of 100% for both affricates) and the city of Sokcho /soktɕʰo/ in which /tɕʰ/ is fortified in one of the three instances that its mentioned (a fortition rate of 33.333% for its single affricate). Accordingly, only words that both fortify relatively often and that make up a large portion of overall fortitions were included in Table 8.

In terms of attention-to-speech style, our hypothesis that OF would increase as attention to speech decreases was not borne out for our optimal model. Although attention-to-speech style was significant in many models in the expected direction, *situation* ultimately led to a lower AIC in all models examined including the one presented here.

This suggests that rather than attention to speech, OF is more affected by the situation it is employed in. OF is most likely to be employed when expressing love to a partner followed by planning a date, comforting a romantic partner, and making a request of a romantic partner. The relatively high usage of OF in these situations indicates that OF is primarily used in romantic relationships, with its particularly high usage in expressing love and its relatively high usage with the term of endearment /tɕaki/ 'honey' and /salaŋ/ 'love', suggesting that it is primarily used to take a stance of romantic intimacy towards one's partner. As discussed by Jang (2021), this is a feature of not only OF or even *aegyo* but baby-talk registers used among adults more generally across multiple languages. However, usage in the non-romantic situations suggests that OF and *aegyo* more generally have a wider range of social meanings and stance-taking usages such as requesting or whining, that are worthy of further exploration, particularly through discourse analysis and interactional sociolinguistics methods (Moon, 2013; Puzar & Hong, 2018).

Beyond situational and stylistic uses, OF was employed more often both by women and younger speakers. This accords with previous observations that *aegyo* is a type of femininity performance, particularly for young women (Puzar & Hong, 2018; Moon, 2013). However, given that 28.6 percent of the tokens were from men, we can see that OF in *aegyo* performances among men are still fairly common (Manietta, 2015; Han, 2016; Moon, 2017; Puzar & Hong, 2018; Moon, 2013). This may suggest that OF and *aegyo*, rather than indexing gender directly, may index activities and stances associated with gender, as has been argued to be the case for other sociolinguistic variables such as the Japanese sentence final particles 'ze' and 'wa' (Ochs, 1992) or the use of falsetto in English (Podesva, 2007). In the case of *aegyo* and OF, it may be that the mediating activity is children and childcare due to *aegyo*'s origin as a baby-talk register, and thus it may be more acceptable for the gender responsible for childcare in traditional gender ideologies to engage in *aegyo*. It could also be the case that since men have historically been cast as protectors/patriarchal heads of family, they are avoiding *aegyo* to maintain the protector/patriarch persona (Moon, 2001; Jung, 2011; Han, 2016). It may also be the case that age-based power differentials play a role. In Korea, age plays an important role in honorification and terms of address (Brown, 2017; Moon, 2018), and Han (2016) argues that *aegyo* is a method of being polite to older people. In the data here, as has until recently been the case for Korean soci-

ety more generally, it was rare for women to be the older member of the couple (5/22 couples), which may have reduced the overall amount of male OF or increased the amount of female OF. We also see that younger speakers increase their use of OF far more when being asked to perform *aegyo* than older speakers, suggesting one of three possibilities: that OF usage in *aegyo* performance is age-graded with speakers employing it less as they get older, that OF is more strongly associated with *aegyo* among younger speakers than it is with older speakers, or that older speakers are more reluctant to employ OF or *aegyo* more broadly in front of a stranger. Finally, although there was no significant correlation between OF and region (or an interaction of region and gender) directly, we do see, unexpectedly, that speakers from *Gyeongsangdo* show a larger difference in fortification rates between affricates and fricatives than speakers from other regions. This suggests two things: (1) that stereotypes of *Gyeongsangdo* men may be outdated or that they perform their stereotypical coldness in phonetic ways unrelated to HJS/*aegyo* and (2) that Gyeongsangdo speakers treat fricatives and/or affricates differently phonologically than do speakers from other regions.

The most noticeable and, to some degree, expected differences in the use of OF among the participants in this study are that women employ OF more than men and that younger speakers display more style-shifting than older speakers in their usage of OF. We may simply attribute this to *aegyo* and hence OF being a performance of young femininity, as has been discussed elsewhere (Moon, 2013; Moon, 2017; Puzar & Hong, 2018), and assume that men are using OF to a lesser extent to disalign with femininity. However, as Jung (2011) and Manietta (2015) note, ideologies of soft masculinity in Korea allow some room for masculinity with feminized aspects. So, the gender and age differences in OF may be a reflection that although other ideologies of masculinity are still at play in Korea, the acceptance of soft masculinity in Korea is increasing among the younger generation.

5. Conclusion

This examination of the use of obstruent fortition (OF) in performances of *aegyo* and across attention-to-speech styles has shown that OF is primarily correlated with situation, age, and gender. The situations it occurs in suggest that it is primarily indexical of romantic intimacy, and the gender and age differences in OF reflect that, even though forms of masculinity valuing femininity have been developing and spreading in Korea, more traditional Confucian forms of masculinity still compete with them. The frequency of OF was quite low, occurring in only 1.130 percent of fortifiable segments. This may be due to OF not only indexing romantic intimacy but also, on occasion, childish, aberrant, and petulant behav-

ior (Moon, 2013; Starr, Wang, & Go, 2020), which may be a source of embarrassment for participants. Consequently, examining other components of *aegyo*, such as nasalization (which was impressionistically much more widespread and which Moon (2013) argues is often synonymous with *aegyo*), may be more fruitful for understanding the variable.

There is still much to be done in the examination of OF. The audio quality of the Zoom recordings was not always optimal, and Zoom has been shown to affect some acoustic measurements relative to in-person recordings (Freemen & De Decker, 2021; Calder et al., 2022; Calder & Wheeler, 2022); in-person audio may lead to more robust results. In addition, linguistic factors influencing OF were not extensively examined, and further examination of these effects could prove fruitful. Additionally, a wider variety of participants from a greater number of age groups, age differences, and types of dyads (e.g., parents and their young children) may offer more insight into the indexical nature of OF. Finally, given that *aegyo* is a heavily enregistered style (Agha, 2003), explicitly requested performances and natural performances may differ in nature. Methods to elicit "natural" *aegyo* may give insights into how OF fits within the style 'in the wild'.

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Appendix A. Participants

Participant ID	Gender	Year-born	Region raised
16F96	Woman	1996	*Gyeongsang*
5M95	Man	1995	*Gyeongsang*
15M95	Man	1995	Capital Region
30F95	Woman	1995	*Gyeongsang*
20M94	Man	1994	*Gangwon*
29M94	Man	1994	*Gyeongsang*
6F92	Woman	1992	*Chungcheong*
40F91	Woman	1991	*Gyeongsang*
43F91	Woman	1991	Capital Region
53M91	Woman	1991	Capital Region
4F90	Woman	1990	*Jeolla*
13F90	Woman	1990	*Chungcheong*
14M90	Man	1990	*Jeolla*
19F90	Woman	1990	Capital Region
45F90	Woman	1990	Capital Region

Appendix A. *(continued)*

Participant ID	Gender	Year-born	Region raised
49M90	Man	1990	Capital Region
50F89	Woman	1989	Capital Region
46M88	Man	1988	Capital Region
3M87	Man	1987	*Gyeongsang*
18M87	Man	1987	Capital Region
39M87	Man	1987	*Gyeongsang*
54M87	Man	1987	*Gyeongsang*
17F86	Woman	1986	Capital Region
44M85	Man	1985	Capital Region
8F73	Woman	1973	*Gangwon*
7M69	Man	1969	*Gyeongsang*
35F68	Woman	1968	*Gyeongsang*
36M65	Man	1965	Capital Region
24F64	Woman	1964	*Gyeongsang*
23M62	Man	1962	*Gyeongsang*
32F62	Woman	1962	*Gyeongsang*
28F61	Woman	1961	*Gangwon*
31M60	Man	1960	*Gyeongsang*
33F60	Woman	1960	Capital Region
41M60	Man	1960	*Gyeongsang*
42F59	Woman	1959	*Gyeongsang*
47F58	Woman	1958	Capital Region
34M57	Man	1957	*Gyeongsang*
48M56	Man	1956	Capital Region
27M55	Man	1955	*Gangwon*
11F53	Woman	1953	*Chungcheong*
12M53	Man	1953	*Chungcheong*

Abstract (Korean)

귀여움 강화하기: 장애음의 강화와 애교

애교라는 용어는 여러 음성학적인 현상과 관련되어 있는 한국어의 귀여운 발화양식을 가리킨다. 이 중 하나가 장애음의 강화 (혀짧은 소리의 한 양상)를 통한 애교 발화양식이다. 본 연구는 8가지 상황극 (데이트, 직장, 가족, 위로, 데이트 계획하기, 부탁, 사랑의 표시)을 통해 애교/비애교 발화시 장애음 강화(Obstruent Fortition, OF)의 비율을 살펴보고, 이에 미치는 성별과 연령의 효과를 검토한다. 총 21 쌍의 부부 또는 커플이 상황극 실험에 참가하였다. 실험 결과, 애교 발화시 장애음의 강화의 비율이 연령 간에 통계학으로 유의미한 차이를 보였다. 즉, 40대 미만 참여자들은 애교 발화시에 비애교 발화시에 비해서 장애음의 강화의 비율이 높았는데 40대 이상 참여자들은 큰 변화가 없었다. 아울러, 애교 발화시 장애음의 강화의 비율이 성별 간에 유의미하게 차이를 보였다. 애교 발화시 여성 참여자들이 남성 참여자들에 비해 장애음의 강화를 더 많이 사용했다. 마지막으로, 상황에 따라 장애음의 강화의 비율이 다르게 나타났다. 8가지 상황극 중 낭만적인 상황극을 진행할 때, 장애음의 강화가 더 두드러지게 나타났는데, 이 결과는 장애음의 강화가 낭만적인 긴밀함을 표지한다는 것을 시사한다.

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