

Effects of audience on orthographic variation^{*}

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Research has demonstrated that speakers make linguistic choices in order to narrow or widen the social distance between a speaker and his or her audience. These choices are often based on a speaker's awareness of an audience's demographic profile, which is composed of characteristics such as age, gender, and ethnicity. The present study investigates the role that awareness of audience plays in influencing orthographic choices in a "demographically lean" community, i.e. an online community where demographic information about the audience is largely absent or intentionally obscured. Results indicate that awareness of audience remains a significant explanatory factor for style-shifting, even in the absence of many of the social cues present in demographically robust communities.

1. Audience, demography and demographically lean communities

Speakers make linguistic choices based in part on the perceived characteristics of their audience (Bell 1984, Giles & Smith 1979). For example, Bell describes how a New Zealand radio announcer style-shifts to more vernacular speech when broadcasting to working class audiences. Similarly, Bickerton (1980) demonstrates that the occurrence of [bin] as a past tense marker in the speech of a Hawaiian Creole speaker is conditioned by whether the speaker is addressing an out-group interviewer or an in-group community member. In each of these cases, "speakers assess the personal characteristics of their addressees and design their style to suit" (Bell 1984:167).

Crucially, researchers who seek to explain variation as a response to audience have explored interactional contexts where they safely assume that speakers have access to and make linguistic choices based on meaningful characteristics of their audience. These meaningful characteristics have traditionally been defined in terms of demographic variables such as the age, sex, or socioeconomic level. Returning to Bell's

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radio announcer, we assume that the announcer has a very explicit awareness of his audience's social class, which is most likely the product of extensive marketing research by the broadcast company. For Bickerton's interviewee, he tends to select the standard form when speaking to the out-group interviewer and the non-standard form when interacting with an in-group member. Given the interactional dynamics of a face-to-face interview context, we assume that the interviewee is making linguistic choices based on the relative social distance perceived between himself and the interviewer. The speakers referred to by both Bell and Bickerton are clearly aware of differences in the characteristics of themselves and their audiences.

The difference between the two audiences is directly related to the kinds of assumptions that the speakers can make about audience characteristics. The radio announcer has precisely researched demographic sketches of the audience while the interviewee is defining the audience in more general, relative terms as having characteristics *not* common among in-group members. However in both cases, speakers are using the resources available to them to make linguistic choices based on their audiences.

Both the Bell and Bickerton studies provide evidence that speakers key on the demography of their audience. Bell's radio announcer surely had a wealth of demographic data from the station's marketers. Bickerton's interviewee likely identified that the interviewer was not a native Hawaiian Creole speaker, and used this information to define the interviewer's out-group. In contexts where speakers *do not* have access to either explicit demographic information or are in interactional contexts where they *cannot* employ social cues to assess demography, does audience influence a language user's linguistic choices?

This purpose of this study is to investigate whether audience influences variation in cases where language users do not have access to audience demography. The study is designed to test whether different interactional contexts associated with different levels of audience awareness trigger style-shifting in communities where audience demography is difficult to establish.

Computer mediated social environments provide an opportunity to test the impact that demography has on audience-focused theories of variation because in some online communities, demographic information is largely absent or intentionally concealed. In these "demographically lean" communities we may expect audience to have little impact on variation because language users lack many of the social cues (Kiesler, Siegel &

McGuire 1984) that are critical to making linguistic choices based on audience demography in face-to-face environments.

Demographically lean communities are online communities where the association between a member's offline demography and their online representation are either incongruous or absent. Designation as a demographically lean, or by contrast, demographically robust community is not necessarily a product of computer mediation; rather it is based on the social norms of the community. In other words, not all online communities are lean.

Social networking sites such as Facebook cannot be considered demographically lean because community members are encouraged to create accurate representations of themselves on their pages by posting images and text related to their lived experiences. Moreover, since most members of a Facebook user's virtual social network are also members of the user's offline social network, content posted to the Facebook page is verifiable by the social network. In other words, Facebook users are held accountable by their social network to present themselves in ways that are congruous with their offline demographic profile.

In contrast, online role-playing game communities such as World of Warcraft (WoW) or City of Heroes (CoH) encourage members to experiment with different personae and virtual representations. For these communities, assuming different personae or "roles" is a fundamental component of the community experience. The success of MMORPGs (Massively Multi-Player Online Role-Playing Games) like WoW and CoH is due in large part to the flexibility that players have in creating a variety of different avatars with imagined backgrounds and experiences. If social norms dictated that players develop avatars based on accurate representations of their offline demographic profile, the replay value of MMORPGs would be diminished and the appeal of these communities would be severely compromised.

Crucially, designation as either a demographically lean or robust community is a function of community norms and not of interface design, although interface design certainly facilitates the revelation of a community member's demography. For Facebook users, the integration of personal photos, blogs, and explicit accounts of educational and employment background on an "Info Page" support the social norm of demographic salience as well as accountability for this information. For MMORPGs, the absence of these interface components supports the relative anonymity of community members with respect to their offline demography.

Given this distinction between demographically lean and robust communities, previous studies on audience such as those by Bell and Bickerton have been conducted in demographically robust communities. For these studies, a speaker's awareness of audience demography is explicit.

The purpose of the present study is to investigate how different levels of audience awareness impact style-shifting. The study does not posit specific characteristics that language users react to in the audience. Rather, the study investigates whether language users style-shift given a well-defined, overt awareness of a specific audience versus a more general, implied assessment of all potential members of the audience. Specifically, the study attempts to answer the following research question: Does an awareness of audience trigger style-shifting in demographically lean communities?

By exploring this question, we will develop a better sense of the role that demography plays in theories of audience design. Specifically, we will be able to assess whether style-shifting is conditioned specifically by audience demography or whether demography is only one of many sets of audience characteristics that language users may focus on to inform their linguistic choices. Moreover, the study will illuminate strategies that members of demographically lean communities employ to develop an awareness of their audience.

The data for this study was collected from City of Heroes (CoH), a superhero-themed MMORPG where players create a variety of superheroes and proceed through the game content by joining with other player-created superheroes to accomplish game-related goals. The data consists of automatically archived chat logs generated through different interactional contexts in the game world. The chatlogs were archived and compiled into a text corpus that was automatically formatted and coded using a variety of computational methods. A summary of the corpus appears in Table 1.

Total messages	316,720
Total words	1,501,271
Mean words per message	21
Unique authors	22,441

Table 1. Corpus Overview

In CoH, community members can be referred to via three referent roles: 1) authors, 2) players, and 3) avatars. *Players* refer to the community

member “behind the screen”. *Avatars* are the three-dimensional representation of the player in virtual space. *Authors* are the creators of texts, which may or may not be associated with the player or avatar by other community members. Authors are the textual abstraction of both the avatar and the player. Because of the virtual distribution of avatars in the game world and the functionality afforded by the CoH chat interface, authors can interact with other authors without having access to each others’ avatars.

2. The Dependent Variable (ING)

Orthographic variation has been shown to be socially meaningful for a variety of communities, including German Punks (Androutopoulos 2000), Jamaican Creole speakers (Hinrichs 2006) and Louisiana French speakers (Brown 1993) among many others.

The alternation between *-in* and *-ing* at the end of some verbs (c.f. “running”, “runnin”) has been the focus of research since the early years of sociolinguistics as a discipline (Labov 1972) and is still popular in more contemporary studies (Campbell-Kibler 2009). The choice between the standard and non-standard variant has been associated with shifts in social class, education level, ethnicity, and age, which makes it an ideal candidate to use in the evaluation of the impact that these kinds of traditional demographic variables have for variation in demographically lean communities. Moreover, the alternation is not bound to any particular language variety of English (Hazen 2008), so we can assume that most members of the CoH community are familiar with the alternation, regardless of their regional background.

The dependent variable is coded as 1 if the non-standard *-in* form is realized and coded 0 if the standard *-ing* form is realized. Table 2 contains a summary of the distribution of both the standard and non-standard variants in the corpus.

Variants	Tokens	Percentage
Standard (-ing, 0)	7323	90.60%
Non-Standard (-in, 1)	760	9.40%
Total	8083	100%

Table 2. Distribution of ING

The frequency data in Table 2 indicates that the corpus is overwhelmingly standard (~91%). From this data, we can infer that orthographic choices are meaningful for the community because the choosing a non-standard

variant in cases where a standard variant exists constitutes a “social action” (Sebba 2007). In other words, by choosing the non-standard variant, authors are choosing to break with the prescriptive spelling norms and to disassociate themselves with the social meaning of those norms.

3. Independent Variables

The study employs three independent variables that contribute to the model of ING variation presented in Section 4. Two of the variables test for the impact of different levels of audience awareness on ING, namely: 1) the relative publicness of the message, and 2) the relative proximity of avatars in virtual space.

Publicness directly measures message access by indicating the number of potential addressees. As publicness increases, an author’s potential audience is only limited by the number of players logged into a particular server. The linguistic choices made by authors in response to large, public audiences are based on a relatively vague awareness of a “general style level of [...] addressees’ speech” (Bell 1984:167).

Proximity tests whether author and addressee avatars are located in the same virtual space. When avatars share the same virtual space, an author’s awareness of audience is precise. In order to access the message, audience members must be grouped spatially around the author’s avatar, providing the player with the ability to see all other avatars with access to the message.

A third variable based on the social group membership of the author has also been introduced to determine whether awareness of audience is conditioned by the meaning that language holds for certain groups within CoH. Language ideologies are powerful social forces that shape language use. By including a social variable, a more nuanced description of the relationship between orthographic variation and audience emerges from the data.

3.1. Publicness (PUBLIC)

Virtual publicness is an indicator of message access. In other words, publicness increases when more community members have access to a particular message. Publicness is indicated in the corpus by the chat channel associated with the message. For example, the Team Channel is accessible only to teammates. The Broadcast Channel is accessible to

every player on a particular server. Private messages or *Tells* are only accessible to a singular addressee. Players choose between chat channels such as these every time they send a message.

Publicness is operationalized on a 3-point scale, where 2 = open access, e.g. messages sent to the Broadcast Channel, 1 = limited access, e.g. messages sent to the Team Channel, and 0 = private access, i.e. messages sent to the Tell Channel. For the public Broadcast Channel, players have a loose sense of audience as messages are accessible by hundreds of other players in the game world. For the private Tell Channel, players have a specific awareness of audience as the message is only accessible by the intended addressee. Thus, we can think of increases in the publicness scale as increases in the number of potential audience members and consequently, an increase in the uncertainty of who the addressees will be.

The data shows that ING is distributed inversely along the publicness scale (Figure 1). In other words, the greatest number of standard tokens occurs in more public contexts while the greatest number of non-standard tokens occurs in more private contexts.

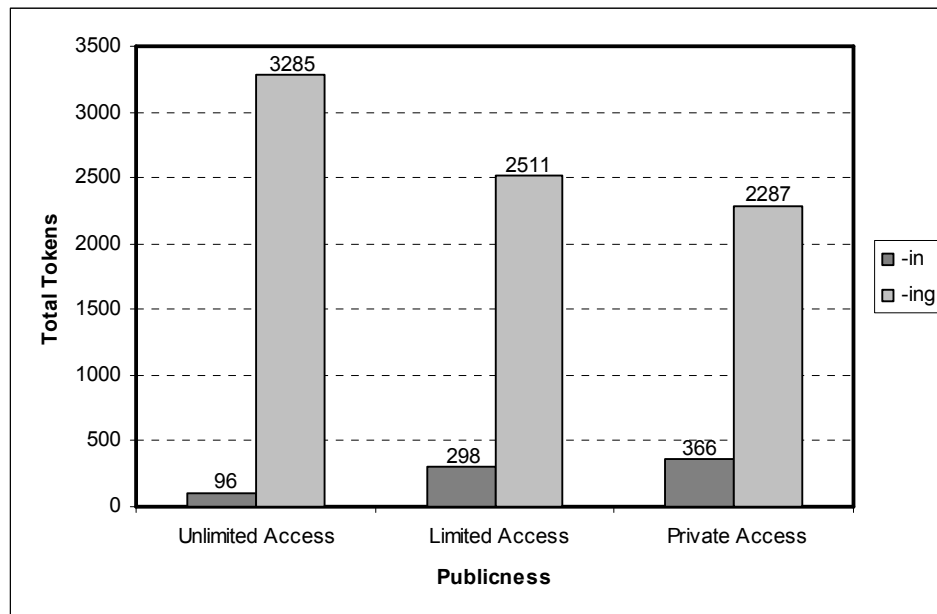


Figure 1. Frequency data for PUBLIC

This pattern can be explained by earlier work on language ideologies about non-standard orthography in CoH. In earlier work (Iorio 2007) I show that CoH community members produced more negative evaluations on both intellectual and affective Likert scales as the frequency of non-standard forms increased in an experimental dialogue. A Likert Scale is a

psychometric scale where respondents indicate the degree to which they agree with a particular statement. The audience of a Broadcast Channel message is assumed by community members to be a type of default or generalized CoH audience. The use of the standard variant in more public contexts may be an attempt by players to avoid negative evaluations, which often manifest counter-socially and lead to removal from teams, public harassment, and ineffective collaboration (Iorio 2008).

The distributional pattern displayed in Figure 1 is our first indication that awareness of audience impacts orthographic choices.

3.2. Virtual Proximity (PROX)

While PUBLIC indicates an increasingly *inferred* awareness of audience by community members, PROX indicates an *explicit* awareness of audience. PROX is related to PUBLIC in that both are determined by the chat channel through which a message is sent. The Local Channel provides message access to any player whose avatar is located within 25 virtual yards of the avatar's location in the virtual space. Figure 2 is a screenshot that indicates the 25 yard access limit of 4 distinct Chat Channels. Players with avatars outside of the 25 yard radius do not have access to the message, while player avatars inside the radius have access.



Figure 2. Screenshot of four distinct Local Channels

When avatars are in close virtual proximity, players have access to similar visual cues as in face-to-face contexts. For instance, players can see their avatars grin, wink, raise eyebrows and so on. In contrast to the Broadcast Channel, the Local Channel is unique in this way because it is the only channel where audience can be sufficiently large and yet completely known to the author.

For the Broadcast Channel, authors have no way of knowing who is accessing their message. Therefore, we would expect that negative public attitudes about the use of non-standard forms may influence language choice. Conversely, authors of messages sent on the Local Channel have a much better awareness of their audience, and can make choices based on the audience they see within the access perimeter around their avatar.

Messages sent to the Local Channel are coded 1 and messages sent to other channels are coded 0.

The odds ratio for the cross tabs of PROX (Table 3) indicate that the non-standard variant is roughly 19 times more likely than chance to occur on the Local Channel. In other words, authors are more likely to use the non-

standard variant when they have a well-defined awareness of their audience.

	Local	Non-Local	Total
-in	525	235	760
-ing	784	6539	7323
Total	1309	6774	8083

Table 3. Cross Tabs for PROX

The relationship of ING to both PUBLIC and PROX is inverted. The interactional context indicated by PROX prefers the non-standard variant while the context for PUBLIC disprefers the non-standard variant. This is our second piece of evidence that shows how player awareness of audience impacts orthographic variation.

3.3. Role-Player Status (RP)

The underlying social motivation behind theories of audience design is that language users make linguistic choices based on a desire to increase or decrease social distance between speaker and audience. More specifically, members of particular social groups can use language as an indicator of group identity, thus signaling linguistically in-group/out-group boundaries. Because of the influence of social group norms on language choice (Eckert 2000), a social group variable has been introduced to test whether a player's group membership influences orthographic variation. Moreover, the social group variable serves to add group-specific meaning to the analysis of audience awareness.

Role-players are a social group that pervades the MMORPG genre. As such, they have well-established *practices* (Eckert & McConnell-Ginet 1992) or activities, customs, and norms that have in-group meaning. Role-players are a group that places high social value on the disassociation between player and avatar. Many role-play groups have explicit policies forbidding the disclosure of player demographic information to ensure submersion on the game world. Role-players engage in play acting as a way to experience the game world through the eyes of their avatars. RP tests whether role-players tend to select the standard or non-standard variant. Role-players are coded 1 while non-role-players are coded 0.

Role-players are a particularly interesting group for this study because RP correlates with both PUBLIC ($R^2 = -0.79$) and PROX ($R^2 = 0.91$). These correlations indicate that role-players tend to avoid the Broadcast Channel and favor the Local Channel.

The odds ratio for Table 4 indicates that role-players are approximately 20 times more likely than chance to select the non-standard variant. This propensity for the non-standard variant is grounded in the high social value that role-players place on the ability to imitate speech in writing. In the case of ING, role-players are making an association between the non-standard variant and speech forms.

	Role-Player	Non-Role-Player	Total
in	512	248	760
ing	711	6612	7323
Total	1223	6860	8083

Table 4. Cross Tabs for RP

Because role-players are a relatively insular group, they tend to interact exclusively with other role-players. The insular nature of the role-playing community is due in part to the group's desire to be immersed in the game world. When role-players interact with non-role-players, their feeling of immersion is diminished as non-role-players interact in ways that may be contradictory to or disrespectful of the social norms for role-players. Since the Broadcast Channel, by definition, provides message access to the generalized CoH community, role-players may disprefer this channel because they are forced to make assumptions about their audience.

The correlation between RP and PROX indicates that role-players tend to use the Local Channel. The Local Channel filters access to the message such that only avatars in close virtual proximity to the author's avatar can participate in the conversation. For role-players, the Local Channel is meaningful because they are able to approximate many of the properties of face-to-face interactional contexts in the game world through their manipulation of avatars relative to their interactional partners.

4. A Mixed-Effects Model

The data was fitted to a mixed-effects model that incorporates both fixed effects and interaction terms, i.e. interactions between variables (Sigley 2003). A mixed-effects model¹ is particularly applicable for this dataset given the correlations between independent variables explained in Section 3. Odds ratios were calculated for the model and reported in Table 5. The y-axis was log-transformed to retain the proportionality of the odds ratios between 1 and 0.

¹ For a detailed description of mixed-effects models, consult Baayen (2008).

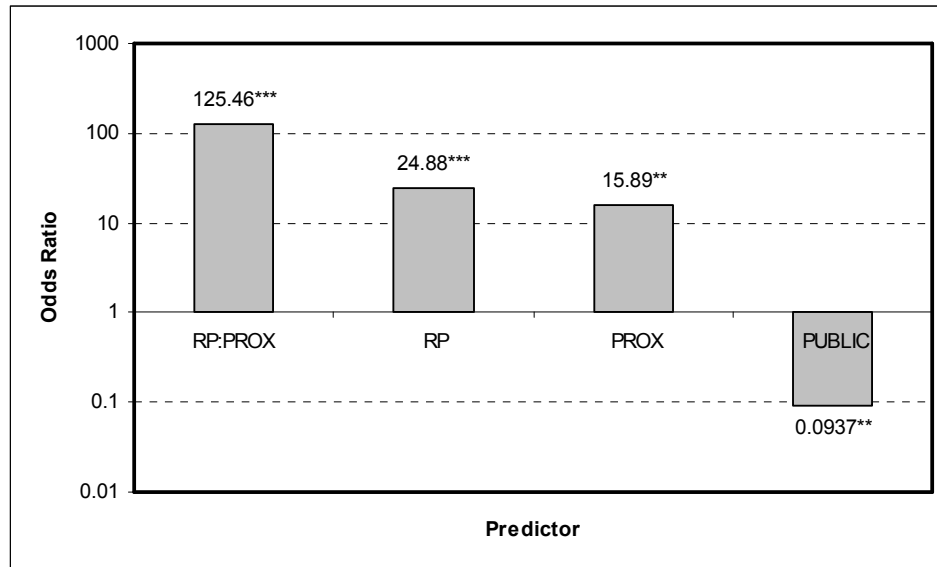


Figure 3. Odds ratios for fixed effects and interaction terms for ING ($D_{xy} = 0.96$)²

The mixed-effects model indicates that the interaction term RP:PROX ($p < 0.001$) is the best predictor of the non-standard variant. The non-standard variant is roughly 125 times more likely than chance to be authored by role-players in close virtual proximity with their audience, who are typically other role-players. This confirms the association importance of audience awareness and its social utility for role-players.

Both the RP ($p < 0.001$) and PROX ($p < 0.01$) variables are significant predictors of the non-standard variant. Role-players are nearly 25 times more likely than chance to select the non-standard variant while the non-standard variant is roughly 16 times more likely than chance to occur when author and addressee are in close virtual proximity. The odds ratio for the PUBLIC ($p < 0.01$) variable indicates that the non-standard variant is roughly 10 times less likely than chance to occur in more public interactional contexts, i.e. contexts where the audience is largely inferred to be the CoH community as a whole.

² Somers' Coefficient (D_{xy}) measures the strength of the model or model goodness-of-fit. A theoretical "perfect fit" for the model is $D_{xy} = 1$. A coefficient of 0.96 indicates that the model is able to reliably account for 96% of the data.

5. Conclusions

The purpose of this study was to test whether an author's awareness of audience triggers orthographic choices in demographically lean communities. The data presented herein clearly demonstrates that awareness of audience, particularly for role-players, is a critical consideration in informing authors' orthographic choices. When role-player status is excluded from the model, orthography varies significantly based on an author's awareness of audience.

The best predictor of the non-standard variant is the interaction term RP:PROX. Given the social value that role-players place on immersion in the game world and in recreating the interactional dynamics of face-to-face speech, this finding is not surprising.

The mixed-effects model also confirms the patterns observed in the frequency data, i.e. that the non-standard variant is more likely to occur in contexts where authors are aware of their audience and less likely to occur in contexts where authors have a much more fluid awareness of audience.

This study has demonstrated that language users make linguistic choices based on an awareness of their audience in spite of a lack of access to the demographic characteristics of their audience. This finding suggests that language users react to sets of audience characteristics, not solely to audience demography. While this study did not isolate and test for the impact of specific characteristics in the audience on language variation, future work on demographically lean communities could identify audience characteristics that are meaningful for the community.

The findings from this study also reinforce the complexity of the relationship between audience and language variation in that demography appears to be only one aspect of audience to which language users react. It is not clear at this point what the other salient aspects of audience are, but given the impact of RP on the model, social group membership and the associated practices specific to social groups within a larger community may prove to be a productive launching point for future investigation.

REFERENCES

- Androutsopoulos, Jannis. 2000. Non-standard spellings in media texts: The case of German fanzines. *Journal of Sociolinguistics* 4(4). 514-533.
- Baayen, R. Harald. 2008. *Analyzing Linguistic Data: A Practical Introduction to Statistics Using R*. Cambridge: CUP.
- Bell, Allan. 1984. Language style as audience design. *Language in Society* 13. 145-204.
- Bickerton, Denis. 1980. What happens when we switch? *York Papers in Linguistics* 9. 41-56.
- Brown, Becky. 1993. The social consequences of writing Louisiana French. *Language in Society* 22. 67-102.
- Campbell-Kibler, Kathryn. 2009. *The nature of sociolinguistic perception*. *Language Variation and Change* 21. 135-156.
- Eckert, Penelope. 2000. *Linguistic Variation as Social Practice*. Malden, MA: Blackwell.
- Eckert, Penelope & Sally McConnell-Ginet. 1992. Think Practically and Look Locally: Language and Gender as Community-Based Practice. *Annual Review of Anthropology* 21. 461-90.
- Giles, Howard & Philip Smith. 1979. Accommodation theory: Optimal levels of convergence. In Howard Giles and Robert st Clair (eds.), *Language and Social Psychology*, 45-65. Oxford: Blackwell.
- Hazen, Kirk. 2008. (ING): A vernacular baseline for English in Appalachia. *American Speech* 83(2). 116-140.
- Hinrichs, Lars. 2006. Code-switching on the web: English and Jamaican Creole in e-mail communication. Amsterdam: John Benjamins.
- Iorio, Josh. 2007. The serious side of play: Language attitudes in an online role-playing game. *Association of Internet Researchers (AOIR) 8.0: Let's Play*. October 18-20. Vancouver, BC.
- Iorio, Josh. 2008. Negotiating linguistic norms in an online community: Implications for collaboration. *107th Meeting of the American Anthropology Association (AAA)*. November 19-23. San Francisco, CA.
- Kiesler, Sara, J. Siegel & T.W. McGuire. 1984. Social psychological aspects of computer-mediated communication. *American Psychologist* 39(10). 1123-1134.
- Labov, William. 1972. *Sociolinguistic Patterns*. Philadelphia: University of Pennsylvania.
- Sebba, Mark. 2007. *Spelling and Society*. Cambridge: CUP.
- Sigley, Robert. 2003. The importance of interaction effects. *Language Variation and Change* 15.227-253.