

PERSONALITY, GENDER, AND THE NORTHERN CITIES SHIFT

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ABSTRACT

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Studies of sound changes in sociolinguistics have shown a consistent trend that women tend to be linguistically innovative and lead most of the major sound changes. Additionally, women have been shown to use more standard variants than men in stable sociolinguistic variables, giving rise to the “gender paradox” where women are both linguistically conservative and innovative. Studies that examine variation within sex groups unravel this paradox by showing that different women behave differently— some being conservative language users while others are innovative. Traditional methods that aim to examine the role of gender in ongoing sociolinguistic change often use sex as a binary variable instead of socially defined degrees of masculinity and femininity. These methods group all women, innovative and conservative, into one sex-based group, and the distinction between those who lead the change and lag behind is lost. Additionally, qualitative studies of leaders of linguistic change have shown similarities in leaders, but there are no quantitative methods to predict leaders of change.

This dissertation goes beyond traditional studies of gender variation to create a quantitative methodology to examine leaders in linguistic changes and explain gender-based patterns of linguistic behavior. A representative set of vowel tokens from speakers from Southeastern Michigan was measured and normalized for each subject, and these data were used in multiple regression analyses to identify how speakers pattern in respect to the Northern Cities Shift (NCS), a female-led sound change in the

vowel system of speakers from urban Great Lakes areas, and possible factors affecting changes. The main factors studied are self-evaluations on 60 personality traits from Bem's Sex Role inventory, which consists of feminine, masculine, and gender-neutral traits. From the feminine and masculine traits, gender indexes are created to explore gender further and the role of sexual orientation is also examined as a factor.

Results indicate that regardless of sex, the more strongly individuals self-identify as "cheerful," the more advanced speakers are in this sound change. Results also show that we can look at the intersection of traits in order to predict the leaders of linguistic change. In general, self-ratings on personality traits that have been traditionally valued as ideal qualities for women to possess are the traits that most positively correlate with further advancement in this sound change. The study also indicates that there are differences between men and women in which traits are indexed socially by the sound change, which emphasizes the importance of looking within sex groups for studies that examine gender as a sociolinguistic variable. This study shows how a more subtle use of labels and traits within the framework of social psychology of language can help shed light on the role of sex, sexual orientation, and gender identity in ongoing linguistic change.

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CHAPTER 1: INTRODUCTION

The goal of this dissertation is to explore the role of personality in ongoing language change. Personality, as I use it here, will differ from the categories used in other recent approaches to the individual and social characteristics of social actors. For example, the use of *practice theory* in sociolinguistics has been an important theoretical development within the field because it has enabled researches to examine how an individual's social identity can influence language use (Bucholz 1999). The focus on individuals' fluid social identities in Community of Practice (CoP) models, rather than fixed social categories in speech-community models, has been especially important in explaining complex patterns of variation both within and among individuals with respect to social variables such as gender. Although CoP approaches allow for an explanation of the active construction of identities and behavior based on social identity, these explanations rely on qualitative analysis and are thus based on particular situations of language use.

Rather than exploring an individual's dynamic social identity, this dissertation will examine how personality can be used to explain linguistic variation. In psychology, personality traits are defined as habitual patterns of behavior, thought, and emotion that differ among individuals and influence behavior (Kassin 2003). Unlike social identities, personality traits are viewed by social psychologists as relatively stable. As a result of this stability, the use of *trait theory*, i.e., the use of personality traits in order to examine behavior, thoughts, and emotions in sociolinguistics can offer a new, quantitative method for explaining variation in individuals and communities.

As personality interacts with various aspects of social identity, such as gender, the importance of personality in variation above the level of the individual becomes more apparent. McCrae, Terracciano, and Costa (2001), for example, show gender-based differences in individual personality traits across college-aged and adult samples that are consistent with gender stereotypes (e.g. women rated themselves higher on warmth while men rated themselves higher on assertiveness). One of their most interesting findings is that gender differences are most pronounced in European and American cultures in which traditional sex roles are minimized, which is contrary to predictions. Here, however, I ask the following question: If personality traits indicate differences with respect to gender at the level of a community, can personality influence linguistic variation at the level of the community, especially as it interacts with social variables (like gender) that have been shown to affect linguistic variation?

1.1 Goals

This current research aims to answer the question of the role of personality at the level of the community by exploring the influence that personality may have on the progression of an individual in the Northern Cities Shift, an ongoing sound change occurring around the Great Lakes region. My research focuses on (1) the creation a quantitative methodology that can be used within the field of sociolinguistics to explain both personality trait- and gender-based patterns of language variation, (2) the examination of how personality and gender are related in the community, (3) the creation of a model for predicting leaders of linguistic change (4) an examination of the leaders of linguistic change at various stages of the sound change.

1.2 Organization of the Present Work

The chapters of the dissertation are organized as follows. Chapter 1 will discuss the issues in the literature that are related to personality, language changes in progress (with a focus on the Northern Cities Shift), and social factors affecting how an individual patterns with respect to personality and language change (with a focus on gender). Chapter 2 will outline the methodology for the current study and illustrate the use of this methodology in an analysis of all of the participants in the study. Chapters 3 will then focus on personality traits that influence production of vowels of all participants. Chapter 4 will mirror Chapter 3 with an analysis of the interaction of personality with gender, separating participants by sex-based groups to see similarities and differences in the way personality influences languages among women versus among men. Finally, Chapter 5 will present a summary of these analyses, their implications, and conclusions for this study.

1.3 Literature Review

Before the discussion of the current dissertation project, the following section will review the current literature and discuss gender as a sociolinguistic variable as well as various issues involving the role of gender in ongoing linguistic change. Additionally, this section will outline different research methodologies that are used within sociolinguistics and other social sciences and trace the development and general issues with using these tools in sociolinguistic research involving gender and language change. The first section of the literature review will discuss the Northern Cities Shift, the sound change that will be used as the linguistic variable in this dissertation. The second section will focus on

gender, the socialization of gender and the interaction of gender with sexual orientation, and the use of gender as a sociolinguistic variable. The third section of the literature review will discuss personality structure, the development of trait theory, and the interaction of gender with personality. Finally, the last section will focus on the methodology for studying personality and gender as well as other topics not addressed in previous sections as they pertain to personality, gender, and the Northern Cities Shift in Michigan.

1.3.1 The Northern Cities Shift

The Northern Cities Shift (NCS) is an ongoing sound change that affects the vowel systems of speakers from urban areas along the Great Lakes. This sound change is a chain shift, where a change in the production of one vowel in the system causes another to additionally change in production. The difference between a chain shift compared to vowel mergers or splits is that the resulting system ends with a readjustment of two productions of two vowels rather than the loss of a production (merger) or additional production (split). The NCS is a chain shift that is specifically affecting six of the lax vowels for speakers in the Inland North. The Northern Cities Shift is the defining feature for this dialect area, which is represented by the shaded area in Figure 1.1.

Figure 1.1 – The Inland North



For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this dissertation.

1.3.1.1 Linguistic variation of the NCS

Historically, the first stage or “trigger” for this shift is the fronting and raising of /æ/ towards a production like [ɛ] or [ɪ]. Although the movement of /æ/ follows a similar trajectory of fronting and raising in other dialect areas around the United States, the Northern Cities Shift finds this change occurring across phonological environments rather than only raising in pre-nasal environments (cf. Labov 2005). In addition to fronting and raising /æ/, the vowel may also be produced with a diphthongal realization as [ɛə] or [ɪə], a feature also not found in other areas where /æ/ is being raised and fronted.

The movement of /æ/ is followed by the fronting of the low back vowel, /ɑ/, to a sound similar to [a] in the second stage of the sound change. For advanced speakers, /ɑ/ may be produced near the position of non-shifted [æ], which can result in miscommunications between NCS- and non-NCS speakers, and even

misunderstandings when native NCS speakers are listening to their own speech (e.g. Preston 2005).

The third stage in the shift is characterized by the lowering, fronting, and unrounding of /ɔ/ to the former position of /a/. Gordon (2001) notes that centralization is also possible. He states that /ɔ/ is occasionally fronted, giving a production of the vowel that is closer to [ʌ] than [ɑ] (p. 17).

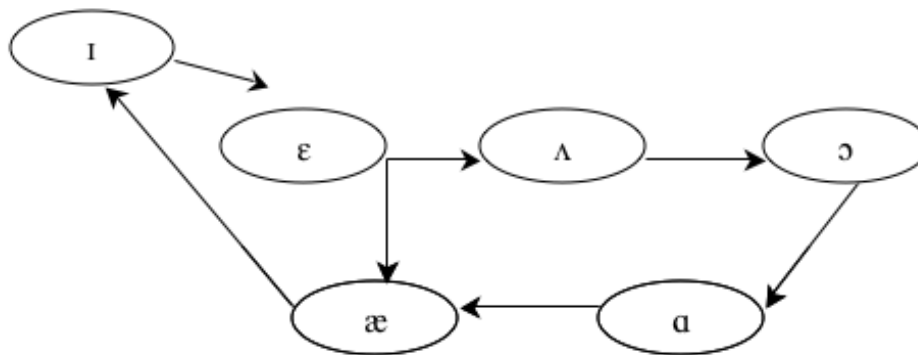
In the fourth stage of the shift, /ɛ/ either centralizes with a production as [ʌ] or it may lower to a (pre-shifted) pronunciation as [æ]. Many previous studies of the NCS have suggested that this stage stands apart from other stages with variability in their analyses of speakers (e.g., Eckert 1991¹, Labov 1994), but Godrdon's (2001) study finds multidirectional shifting with this vowel as well as others. For Gordon, not only does he find either backed or lowered productions, he also finds these tendencies to combine with a result of a variant that is both backed and lowered, giving a similar production as [a] (p. 54).

In the fifth stage of the NCS, the general trend is for /ʌ/ to back towards a production of [ɔ]. Other possible productions of this variable include a raised production similar to [u] or a lowered production similar to [ɑ] (Gordon, p.17). Previous researchers (e.g., Eckert 1991, Gordon 2001) have also noted in their studies that for this stage and the final stage, the lowering and centralization of /ɪ/ to a schwa-like production, speakers

¹ Eckert (1991) acknowledges the variability in production of other vowels but only analyzes this variability with respect to /E/, highlighting a uniqueness to the range of variability found with this stage of the shift.

produce far fewer shifted tokens. Figure 1.2 illustrates all of the stages of the Northern Cities Shift², showing the general clockwise rotation of the lax vowels as a system.

Figure 1.2 – The Northern Cities Shift

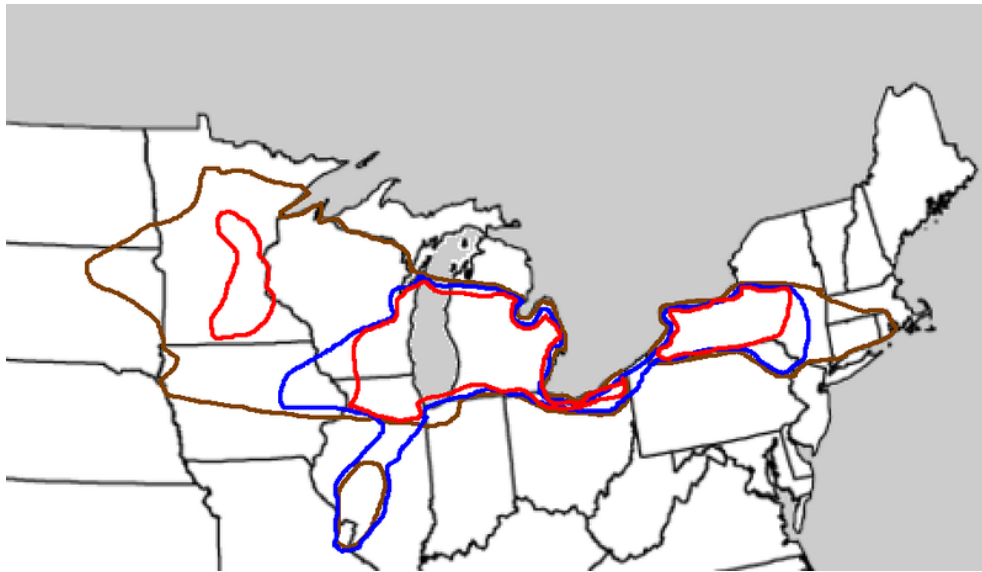


1.3.1.2 Social variation of the NCS

This Northern Cities Shift is a sound change that is in progress throughout the Great Lakes region. This shift is so named because it is an urban sound change that appears in speakers who live in areas stretching from larger cities that border the Great Lakes, such as Rochester, New York along the Erie Canal to cities such as Buffalo, NY, Cleveland, OH, Detroit, MI and Chicago, IL, and Milwaukee, WI. Since this is an ongoing sound change, different individuals and communities are characterized by different stages of the sound change. The “core area” of the NCS is the location where the sound change is in the most advanced stages. The area on the map that lies between Detroit and Chicago that is bound by all three isoglosses on the map in Figure 1.3 represents the “core area” of the NCS.

² Only the general trajectories of the vowel changes found across studies are shown here for simplification

Figure 1.3 – Core areas of the NCS (Labov et al 2005)



Each isogloss on the map in Figure 1.3 separates advanced from non-advanced productions of NCS vowels: the darkest, outermost isogloss which extends from Minnesota to Massachusetts encloses areas in which /ʌ/ is produced further back than /a/, a second isogloss that extends from Wisconsin and Iowa to Eastern New York circles the areas in which /ɛ/ is retracted, and the innermost isogloss, which only circles Chicago, Mid-Michigan, and Western New York, encloses areas with the raising, fronting, and tensing of /æ/. The most advanced speakers of the NCS are found in areas circled by all three isoglosses.

The Northern Cities Shift is a sound change that is largely occurring below the level of social awareness. Speakers from these areas with this sound change are unaware that their speech is becoming increasingly different from other speakers. In the last 20 years, there has been an increase in the number of studies that have aimed to

explain the social variation from speakers who are differentially participating in this sound change. These studies consistently show that the leaders of this sound change are generally young, European American females who are from non-rural areas (e.g. Eckert 1988, Gordon 2000). Men many also participate in the NCS, but typically not at the same rates as women from the same community. Studies that investigate language and ethnicity show that speakers of African American Vernacular English and members other ethnic minority communities show less evidence of participation in the Northern Cities Shift (Roeder 2007, Jones 2003, Gordon 2000) compared to their European American counterparts. Other studies (e.g. Ito 1999, Callary 1975) have shown the slower rate of progression of the features of the shift into less populated areas. Age, sex, ethnicity, and region as influences on the shift in Michigan are reviewed in Evans et al (2000) and Evans et al (2006).

Although the literature has examined traditional sociological variables, such as ethnicity, gender, and socioeconomic status, many individuals pattern outside of expectations based on using these traditional variables alone; the role of other aspects of social identity can be equally or more important. Eckert's (1989) study of "jocks" and "burnouts" in the Detroit area, for example, highlights the role that social categories play within a high school community. In this study, she contrasts adolescents' use of phonological (NCS) variables based on either grouping them with respect to their parent's socioeconomic status or their own social categories of "jocks", "burnouts", and "in-betweens". She finds that "individual adolescent identity, rather than ascriptive class, is a powerful determiner of phonological variation" (p. 201). The use of socioeconomic status has been one of the most important variables in the study of language variation

and change since Labov's (1972) study of the social stratification of /r/ in New York City department stores. In fact, the first of Labov's (2001) principles of linguistic change is based on social class, known as the *Curvilinear Principle*.

Principle 1: Linguistic change from below originates in a central social group, located in the interior of the socioeconomic hierarchy. (p. 188)

While socioeconomic status may often explain the stratification of adult speakers, Eckert shows that this same variable may not accurately account for the variation among adolescents, who are the leaders of the language change. Eckert's results are important because they show the need to look beyond traditional frameworks and sociological variables in order to explain some patterns of language variation.

1.3.1.3 Perceptions of the Northern Cities Shift

Since the Northern Cities Shift is a "change from below" the level of social consciousness, speakers are unaware that their speech is deviating from what is thought of as "standard." Preston (1996) shows that local speakers in southeastern Michigan believe that their speech is the most standard speech in the country and (white, middle class) speakers from the area have high levels of linguistic security. A question that arises is whether Michiganders have reinterpreted the shifted speech as a new standard or if they have the same idea of standard as speakers from other area of the country. Niedzielski's (1999) perceptual study of Detroit-area residents indicates that speakers from southeastern Michigan do not recode NCS-shifted speech as the standard, though. In her study, participants listened to tape-recorded speech of a local

Michigan speaker and they were told to consider the vowels they heard in different words. Then, they were asked to match what they heard to three resynthesized vowel tokens (from the same speaker's data) and choose the vowel that best matched the original. Although the speakers had three choices of vowels to match (the actual NCS-shifted vowel, the "canonical vowel" based on Peterson and Barney 1952 values, or a hyper-standard variant), none of the speakers actually chose the actual NCS-shifted variants when they had to match what vowel was played when they thought the speaker was from Michigan. Since they believed the speaker was from Michigan and they believe that Michiganders speak the most standard English, they chose the canonical or even hyper-standard productions as the vowel that the speaker said. If they speakers believed that they were hearing speech of someone from Canada rather than Michigan, they were able to accurately match the vowel they heard to the resynthesized token. These results suggest that there is mismatch between perception and acoustic reality with regards to Michiganders analyzing their own speech, which can explain how a change from below continues to proceed.

In a cross-dialectal perceptual study by Labov (reported in Labov 2005), Labov and associates played a token of an NCS-shifted vowel in three environments—in isolation, in a phrase, and in a sentence—and asked speakers from different areas to say which word they heard. Even native NCS-speakers showed correct vowel identification rates under 40% when a word was played in isolation. These rates did not increase until they heard the word in a phrase or an entire sentence, which shows that even native dialect speakers have difficulty in perceiving their own speech.

1.3.2 Gender

In addition to social class, gender has been one of the most important social factors in the study of linguistic change and variation. Throughout the past five decades of research in linguistics, various studies have remarked about how women tend to lead linguistic changes, use fewer stigmatized language forms, and show a greater awareness of stigmatized and prestige language forms (Chambers 2003, p. 116).

Although we have gained valuable insight into the role of gender in variation, the role of gender can be quite complex and there have been many criticisms to the use of gender in sociolinguistic studies as gender interacts with sex, sexual orientation, and other social variables.

1.3.2.1 Gender and Sex

The distinction between sex and gender is traditionally recognized as a difference between biological and socio-cultural distinctions between men and women. Sex is a biological construct where distinctions begin to form soon after conception. After birth, an infant is typically classified as biologically male or female based on gonadal, hormonal, and genetic characteristics. Although sex tends to be seen as a binary variable, many researchers and doctors note that this separation is not so clear. Milton Diamond (2010), for example notes that because of the amount of biological variation at birth, the total number of biological classifications is actually very large and discusses issues with the biological categorization of infants as “male” or “female”, especially with criteria such as absence or prominence of external genitalia. Although

the designation of an individual as biologically female or male seems to be a basic notion, Diamond states “it appears to be impossible to draw any bright line that decisively and non-arbitrarily separates men and women.”

While there are problems with sex classification, many studies in the social sciences aim to go beyond biological differences and use cultural differences between women and men. Gender, unlike sex, is viewed as a gradient, rather than categorical variable. Traditionally, individuals could be placed along a continuum where masculinity and femininity were at opposite ends of the same spectrum. Starting with research in the 1970s, gender theory has evolved to include a view that varying degrees and masculinity and femininity co-exist within an individual (cf. Bem 1974, Spence et al 1975). Instead of one continuum of gender, separate continua of masculinity and femininity came to be used to study gender as a variable.

Despite these advances in gender theory, one large criticism of gender research within the field of sociolinguistics is that most sociolinguistic studies that examine gender as a social variable still use sex-based binary categorizations of men and women into two distinct gender groups. Unlike the use of social class, Conn (2005) notes “there hasn’t been any adequate proposal for the adoption of a gender index (GI) based on a combination of various local or globally constructed attitudes and practices regarding male and female behavior, in addition to a speaker’s biological sex,” (p. 16). In Conn’s study of the male-led sound change of (ay)-centralization in Philadelphia, he aims to move beyond the binary distinction of gender based on biological sex and constructs a GI based on sex, sexual orientation, and childhood and adolescent socialization experience, however his results “yielded little additional information from

sorting the data by sex and/or sexual orientation” (p. 183). He concludes by stating that a more objective way of measuring an individual’s relative femininity and masculinity must be used in order to study gender. As responsible social scientists, an important goal of gender and language research should be to move beyond the categorical use of gender as a social variable. This goal has been argued by Eckert (2000), who warns about over-simplistic models of and gender and discusses how “[t]he primary importance of gender lies not in differences between males and females across the board, but differences within gender groups.” This dissertation aims to move towards that goal with the creation of a new methodology that will enable researchers to (at least) indirectly study the effects of socially constructed gender on linguistic change.

1.3.2.2 Gender as a Sociolinguistic Variable

Gender is one of many intersecting and dynamic social identities that is studied within the field of sociolinguistics. Eckert and McConnell-Ginet’s (1992) use of Communities of Practice (CoP) offers a social construction point of view of language, suggesting that we use language as a way to actively construct our social identities. As we interact with different situations and contexts, we express different aspects of our identity by constructing our identity with expressive language use. With the CoP approach, Eckert and McConnell-Ginet highlight the importance of the local meaning that is attached to language variation in a community.

The importance of looking at local meaning is mirrored in Eckert’s (2000) study of Belton High School in Detroit. With respect to gender, she finds that in early stages of a

sound change, there is little differentiation between men and women with respect to use of NCS variables. The innovative linguistic change is first connected to local social group identity as a jock or burnout among the adolescents in the high school. Gender differentiation becomes more pronounced as the change progresses and the relationship between social group identity and gender becomes less clear.

As Eckerts' work shows, gender has been particularly important as a variable in studies that examine linguistic changes that are in progress. Labov (2001) summarizes findings from the last several decades of sociolinguistic work in three principles that are related to gender and language use.

Principle 2 (the Linguistic Conformity of Women): For stable sociolinguistic variables, women show a lower rate of stigmatized variants and a higher rate of prestige variants than men. (p. 266)

Principle 3: In linguistic change from above, women adopt prestige forms at a higher rate than men. (p. 274)

Principle 4: In linguistic change from below, women use higher frequency of innovative forms than men do. (p. 292).

From these principles, Labov discusses how a paradoxical situation arises in which women seem to be both innovative and conservative at the same time, which he calls the *Conformity Paradox*.

Conformity Paradox: Women deviate less than men from linguistic forms when the deviations are overtly proscribed, but more than men when the norms are not proscribed. (p 367)

A speaker's gender plays a pivotal role in awareness of the social evaluation of linguistic variables. This paradox is resolved by an examination of different situations.

By contrasting changes in progress with stable sociolinguistic variables, Labov shows that not all women behave the same. The innovative women in Philadelphia that he discusses, for example, are also the same women who use more of the stigmatized stable sociolinguistic variables. There are some women who are innovative and other women who are behaving conservatively in these studies. In solving the gender paradox of women being both innovative and conservative, Labov illustrates the problem of using gender as a binary variable in sociolinguistic research since not all women pattern the same.

1.3.3 Personality

While various studies of language variation in communities of practice illustrate how individuals in local communities negotiate gender and other aspects of their social identities, such as Bucholz's (1999) examination of identity practices among "nerd girls", one disadvantage of using the CoP approach is that it offers only qualitative analysis of a community after extensive ethnographic research. Since one's gender identity is dynamic, the exploration of linguistic variation becomes highly contextualized. Additionally, these models offer a qualitative rather than quantitative analysis of variation, which does not allow for a prediction of linguistic behavior at a local or global level. To use gender as a sociolinguistic variable, we need to account for the quantitative patterns of gender-based variations that we have observed in the last several decades of research (summarized in Labov's principles), but we also need account for the fact that this variable that we want to use is always changing. Perhaps the reason that we have been unable to move beyond sex-based categories in

quantitative studies that try to implement a gender index (e.g. as in Conn) is because gender is too complex a variable to measure directly. Instead of trying to directly use gender in sociolinguistics, this dissertation argues for the use of personality traits, stable characteristics of an individual that correlate with gender (and other aspects of an individual's social identity), to account for gender related patterns of language use in sociolinguistic studies.

1.3.3.1 Personality Psychology

Since the 1930s, personality psychology has become an important discipline within the social sciences. Allport's (1937) publication of *Personality: A Psychological Interpretation* was the first formal discussion of personality within the social sciences. In *Personality*, Allport defines personality as "the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment." Stemming from this foundational work, the field of personality psychology has developed from four central goals (Runyan 1997, p. 44):

- (1) Developing general theories of personality
- (2) Studying individual and group differences
- (3) Analyzing specific processes and classes of behavior
- (4) Understanding individual persons and lives

In order to achieve these goals, there have been a number of units of analysis that personality psychologists have used to understand individuals and behaviors, including cognitive styles, instincts, interests, motives, and needs. John Johnson (1997) argues

that all of these proposed units of study can be captured by the use of *personality traits*.

He defines personality traits in the following way:

Personality Traits: Traits are consistent patterns of thoughts feelings, or actions that distinguish people from one another. (p. 74)

He points out three important features in this definition of traits that enable them to be used systematically for an understanding of personality. First, he highlights that traits can refer to thoughts, feelings, or behavior, rather than just behavior, which was focused on by previous psychologists (SEE Buss & Cantor 1989, Emmons 1989). Second, he discusses how the use of traits necessarily involves a comparison between individuals. For example, the label of an individual as “aggressive” indicates that person seems to have more aggressive thoughts, feelings, or behaviors than others. Third, and perhaps most importantly for the use of a trait as a unit, they must display “distinctive consistency.”

“Traits seem to be required for science of personality, because any science involves detecting and explaining consistent patterns (Hanson, 1958)... If people had no stable properties (i.e., traits), they could not be studied scientifically.” (p. 74)

Wiggins (1997) echoes this viewpoint. He states that “[i]n attempting to account for individual differences... trait approaches are necessary for providing a complete account of human differences,” (p. 97). Wiggins continues his discussion of the use of traits in social science by asserting that traits can be a valuable tool to predict social behavior, but also notes the importance of distinguishing traits from generative mechanisms in terms of using traits to explain social behavior. He says that *surface*

traits are institutional constructs – ordinary language descriptions of person attributes that can vary in their interpretation both cross-culturally and sub-culturally, while *source traits* are generative mechanisms responsible for the range of human behavior, (p111-113). For example, the trait “intelligent” can be interpreted differently in different communities or language groups—in one area it could only refer only to having aptitude related to studying academics, while in other communities it can refer to a more general aptitude for assessing situations and problem-solving (a difference between “book smart” and “street smart.” While there is a relation between source and surface traits, the use of traits observed in one culture may not necessarily explain behavior observed with that trait cross-culturally. He suggests that

“the *conceptual* distinction between surface traits and source mechanisms resembles, or is at least compatible with, Chomsky’s (1965) distinction between the surface and deep structures of language, a model that may be especially useful in stimulating thought about the plausible origins of personality traits,” (p. 113).

This dissertation will explore the relationship between personality traits and linguistic behaviors. In doing so, I aim to explain local linguistic behavior based on ethnographic observation and sociolinguistic interviews as well as create a model that predicts local (and perhaps universal) characteristics of leaders of linguistic change.

1.3.3.2 Language and Personality

Dixon (1977) asserts that all human languages have terms that denote personality traits. These personality traits often vary with other traits within a given language and the co-variants may differ among different languages. The basic dimensions of

personality that are common among all language, however, can be examined by looking at various combinations of specific traits within any given language. Psychologists look at this *personality structure* in order to examine the most basic dimensions of personality. The intersection of traits like energetic and cheerfulness define a dimension of personality that is termed extroversion in many English-speaking cultures (McCrae and Costa 1997).

Research in psychology has used various representations of trait structure. An influential representation has been the Five Factor Model (FFM) in which most personality traits can be seen as a convergence of five basic dimensions (Digman 1990): neuroticism or emotional stability; extroversion or surgency; openness to experience or intellect, imagination, or culture; agreeableness or antagonism; and conscientiousness or will to achieve. Psychologists use these terms in personality questionnaires in psychology as well as trait adjectives in other disciplines (McCrae & John 1992).

Since all human languages include terms for describing different personalities, the learning of these terms and their application plays an important role in the process of socialization (McCrae & Costa 1997). Moreover, since any given language may not contain a simple natural language (adjectival) term for any given personality trait, the study of the development of social categories and the alignment to these categories become quite complex.

During socialization, gender roles, including gender-differentiated language use are also learned. Given the role of socialization in personality formation and identity, there is a surprising lack of research in the area of where these intersect language use.

Sociolinguistic studies of gender and language tend to look at the extent to which gender socialization has affected language use and (largely) ignore the role of personality socialization (that may interact with gender socialization) on language use. Some of the exceptions that have discussed personality, though not used it as a variable of studies, are discussed by Chambers (2003). He notes that “[t]here appears to be a tendency for individuals who are at the centre of their social group to run ahead of the group in their use of salient markers,” (p. 110). He illustrates this tendency with case studies from Boston (Fischer 1958), Toronto (Chambers 1984), and Tokyo (Sibata 1960). In the Tokyo study, for example, Sibata was looking at the dissemination of made-up words among children and found that the most active spreaders of the new words were children who had a combination of certain social characteristics. The traits shared by the leaders of implementing lexical change were those who he described as cheerful, popular, active in social life in the class, scholastically superior, more emotional than reasonable, and likely to have older siblings. Chambers finds that this list of characteristics describes the leaders in the other studies as well, which seems to suggest a cross-cultural similarity may exist among leaders of linguistic change, rather than culturally specific characteristics that may result from socialization.

Besides personality, social identities are shaped and formed during socialization. An important stage in socialization is the introduction of pre-adolescents and adolescents into the “heterosexual market” (Eckert 1989; Eckert & McConnell-Ginet 2003). Eckert (1989) challenges the idea that gender-differentiated language use is primarily results from the peer-group segregation that is typical during childhood and adolescence. Instead, she argues that behavior (including linguistic behavior) can only

be understood in reference to the introduction and entrance into heterosexual market. During this life stage, individuals learn to relate to members of the opposite sex while they simultaneously create intensely sex-differentiated peer groups where individuals of the same sex learn to relate to individuals of the opposite sex. During this stage, children use various means to construct their gendered self. Athletic ability, for example, may be a valuable commodity for males in the construction of a masculine identity, while popularity or physical appearance may be valuable for females in the construction of a feminine identity.

With Eckert's view of the heterosexual market, it becomes important to examine the huge impact that personality will have on gender development. If females acquire symbolic capital related to popularity, for example, then females who have personality traits associated with popularity and choose this social role may gain more symbolic capital. The result of this socialization is that gendered behavior becomes inextricably intertwined with one's personality. According to Costa and McCrae (1997), while development of complex social identities are shaped and change throughout the life of an individual, personality seems to stabilize in a period after adolescence, but maintains a constant influence over identity development:

"Roles clearly change with age, but roles are not personality and apparently do not have much influence on it. Indeed, it is more likely that personality traits affect the roles we choose to play and the ways in which we interpret both chosen and assigned role." (p. 275)

This interaction of personality with aspects of an individual's social identity suggests the necessity to consider differences in personality when attempting to describe, explain, or predict behavior based on social categorization.

1.3.4 Bem's Sex Role Inventory

The intersection of personality psychology and gender is more apparent in studies beginning in the early 1970s that aimed to explain patterns of behavior based on psychological gender. Perhaps the most influential of these studies that aimed at creating a new instrument in the field of psychology to measure dimensions of masculinity, femininity, and androgyny is Sandra Bem's (1974) study called *The Measurement of Psychological Androgyny*. This study was so influential because it was one of the first studies in the field to assert that masculinity and femininity coexist along separate continua within each individual and it provided a technique to measure these aspects of an individual quantitatively with the Bem Sex-Role Inventory (BSRI).

1.3.4.1 Development of the BSRI

The BSRI was originally developed to examine masculinity and femininity without building an inverse relationship between the two. Initially, Bem and her students compiled a list of 200 traits that seemed to be "positive in value and either masculine or feminine in tone" (p. 156). Additionally, another list of 200 gender-neutral traits was compiled, half of which were desirable or positive traits for an individual to possess, whereas the other half were negative traits.

The main goal in compiling these traits was to find traits that were more desirable for men to possess or more desirable for women to possess to create Masculinity and Femininity scales. For each trait, she asked 40 undergraduates at Stanford to judge the desirability of each term on a 7-point scale, where a score of 1 indicated "not at all

desirable” and 7 indicated “extremely desirable”. Each judge was asked to rate all 400 terms for either a man (e.g. “In American society, how desirable is it for a man to be truthful”) or for a woman, but no judge was asked to rate both (p. 158).

For a term to be selected for use in the final scale, a trait was judged as “masculine” if both the male and female judges found the trait to be significantly more desirable for men than women and it was judged as “feminine” if judges found it to be significantly more desirable for women to possess³. From the traits that satisfied these criteria, 20 masculine and 20 feminine traits were chosen for the BSRI. An additional 20 neutral traits (10 positive and 10 negative traits) were chosen if both male and female judges found the trait to be no more desirable for one sex than the other and if there was no significant difference between the overall desirability ratings between the male and female judges. Table 1.1 summarizes the final traits used in the BSRI.

³ Note that the judgment of a trait as either masculine or feminine is selected based on whether it was more desirable for one sex group to contain than the other, which does not necessarily mean that it is undesirable for the other group to possess the trait.

Table 1.1 – Masculine, Feminine, and Gender-Neutral Traits of the BSRI

Masculine Traits	Feminine Traits	Neutral Traits
Self reliant	Yielding	Helpful
Defends own beliefs	Cheerful	Moody
Independent	Shy	Conscientious
Athletic	Affectionate	Theatrical
Assertive	Flatterable	Happy
Strong Personality	Loyal	Unpredictable
Forceful	Feminine	Reliable
Analytical	Sympathetic	Jealous
Acts as a leader	Sensitive to other's needs	Truthful
Willing to take risks	Understanding	Secretive
Makes decisions easily	Compassionate	Sincere
Self-sufficient	Eager to soothe hurt feelings	Conceited
Dominant	Soft Spoken	Likable
Masculine	Warm	Solemn
Willing to take a stand	Tender	Friendly
Aggressive	Gullible	Inefficient
Acts as a leader	Childlike	Adaptable
Individualistic	Does not use harsh language	Unsystematic
Competitive	Loves children	Tactful
Ambitious	Gentle	Conventional

Originally, the BSRI was used to indicate whether an individual was sex-typed or androgynous. To use the BSRI, individuals had to rate the extent to which each of the terms described them on a 7-point scale. If their average score for all of the feminine traits was significantly different from their average of all of the masculine traits, they were labeled as “sex-typed” (either “feminine” with a higher score on the female traits or “masculine” with a higher score on the masculine traits). If an individual did not have

significantly different total masculine or feminine scores, the individual was labeled as “androgynous”.

There are several advantages to the development of the BSRI. The first, and perhaps more important, was that Bem found that using this instrument did not force a negative correlation between masculine and feminine scores, supporting the idea that these constructs are not at opposite ends of the same spectrum. Another great advantage of the measure is its internal consistency. In a psychometric analysis, she found that average scores for masculine, feminine, and neutral traits were consistent in two independent normative samples. Additionally, all scores were shown to have high test-retest reliability of 90% or greater after a 4-week interval (p.160).

1.3.4.2 Reception and Use of the BSRI

Much of the initial criticism of the BSRI centered on the categorization of individuals as androgynous. Spence (1975), for example, suggested that it is not merely being equal in terms of masculinity and femininity that defines someone as androgynous, but having relatively high levels of both masculinity and femininity that results in androgyny, which enables an individual to perform both social roles. As a result, a revised scoring method was created (Bem 1977) that labels an individual as “sex-typed” (either more feminine or more masculine), “androgynous” (with high levels of both masculinity or femininity) or “undifferentiated” (with low or neutral scores on both masculinity and femininity). An expansion of the early theories of gender identity comes in Bem’s (1981) Gender Schema Theory (GST). The theory posits that one’s gender identity will affect the acquisition of one’s gender traits, attitudes, and behavior. With the GST, a sex-typed

individual will more likely exhibit sex-typed behavior than someone who is not sex-typed. In other words, individuals who identified more with traits that were desirable to either males or females would be more likely to exhibit behavior tied to masculinity or femininity; a sex-typed individual is more influenced by their gender identity than a person with androgynous gender traits.

Beyond the initial criticisms and revisions of the BSRI, the last 30 years have seen the instrument used across different cultural settings to provide a measure of sex role stereotyping (Colley et al 2009). One continued source of criticism involves the global validity of the instrument as a measure of sex-role orientation. Although there are recent studies, such as Holt & Ellis (1998), that have revalidated all but two of the original BSRI traits (“loyal”, which is now shown to be neutral, and “child-like”, which is now shown to be undesirable), these traits seem to only be valid in white communities in the United States. In the UK (Wilcox & Francis, 1997) and in Japan (Sugihara & Katsurada 2000), for example, items on the BSRI are shown to be differentially desirable for males and females and result in necessary adjustments of the scale for the use of sex-role stereotyping in these communities. Since gender roles are a social construct, it should not be surprising that there are cross-cultural differences in desirability of traits based on gender roles for men and women from different cultures. It is still important, however, to keep in mind that these gendered traits (as well as the gender neutral traits) that are used in measures such as the BSRI only represent surface traits⁴ and must be used to predict behavior within the valid cultural constructs. As Harry Triandis (1997) discusses, we cannot use personality traits to predict behavior

⁴ As discussed previously in section 1.3.3.1

(whether gender-based or based on other aspects of social identity) globally, however “we can say that in that culture, on the average, people are more likely to act in this way or that. When that [cultural] information is combined with information about personality, there is a good chance that behavior can be predicted,” (p. 459). As a tool of measurement, at its core, the BSRI consists of a list of traits. These traits that have shown a high degree of retest reliability, which makes them ideal for use as stable traits in personality-based approach to behavioral research. Additionally, many of these traits have been shown to have associations with gender, which makes them ideal for use in gender-related studies of behavior as long as they are used in conjunction with information about the cultural construction of gender in the community of use.

1.4 Chapter 1 Summary

From the preceding discussion, I would like to highlight the importance of using a stable feature, i.e. a personality trait, in order to study differences among individuals. In the field of personality psychology, traits have been used since the 1930s in order to predict many aspects of social behavior. The strength of using a trait-based approach to behavior is the stability coupled with the ability to measure not only trends of behavior among a groups of people, but also the ability to compare individual difference within those groups.

Current trends in gender and language research have shown the inadequacy of using binary constructs of gender in the explanation of gender-related patterns of variation. By moving beyond the use of a binary variable with approaches such as the Communities of Practice, however, gender is used as a dynamic variable that can

explained qualitatively, but lacks a quantitative framework that allows for prediction across situations within a community. Since personality traits can correlate with gendered measures such as the Bem Sex-Role Inventory, the use of personality traits offers a stable property of an individual that can be used to scientifically study linguistic behavior that may also capture gender-related patterns of linguistic behavior.

The Northern Cities Shift is an ongoing sound change occurring in Michigan. Gender has been a particularly important variable of study in this sound change, however, sex-based categories have traditionally shown that women are leaders of this sound change, despite the fact that some individual women may pattern like men in lagging behind in the change and some men may pattern like women in leading the change. This dissertation aims to go beyond these studies by using the BSRI as a tool to study the NCS. In doing so, I hope to be able to show how individual personalities can affect language, show how gender-based patterns of language use can be captured quantitatively while moving beyond binary gender categories, and create a predictive model of linguistic behavior for the NCS in Michigan.

CHAPTER 2: METHODOLOGY

Data collection for this project was conducted in East Lansing, Michigan on the Michigan State University campus between the fall of 2008 and fall of 2009. The Lansing/East Lansing area is situated 90 miles away from the larger cities of Detroit and Grand Rapids, and it is less than 250 miles away from Chicago, Illinois. East Lansing falls in the center of the Inland North dialect area defined by the *Phonological Atlas of North America*. Because of this location, and because much of the research on the NCS has been conducted in the Detroit area, Michigan State University is a good area to study ongoing linguistic change among young speakers since it draws on a population that comes from these well-studied surrounding areas.

2.1 Michigan State Student Community

The student community at Michigan State contains a strong sense of solidarity, particularly in terms of which area of the state that students are from. Although Michigan State is one of the largest public universities in the United States, according to the 2008 MSU Office of Admissions, more than 80% of the student population comes from within Michigan. Based on which locations from within Michigan that students come from, there are certain terms that students may use as a marker of identity, such as a “Yooper” for students who come from the Upper Peninsula of Michigan. The three counties where the majority of MSU students come from according the Office of Admissions are Oakland County, Wayne County, and Macomb County. These counties collectively make up the Detroit metropolitan area, more commonly referred to as “Metro

Detroit” by students who come from this area. The other areas of the state that see a high number of student enrollment are counties around the cities of Lansing, Grand Rapids, and Saginaw, which are within the Inland North dialect area, unlike counties in the Upper Peninsula, from where far fewer students come.

Which area of the state that students come from can be particularly important when it comes to the selection of where to live. Campus Living Services and Residence Life reports in 2010 that students from certain areas of the state, such as southeastern Michigan, generally tend to live in residential hall areas such as Akers Hall, while out-of-state students and graduate students live in areas such as Owen Hall or Cherry Lane. All incoming freshman students and transfer students are required to live in the dormitories. Since many of these residential hall areas have their own dining facilities, grocery stores, and lounges, there are smaller communities formed from within the larger student community in which students operate. The formation of these communities may reinforce many norms (such as linguistic norms) that students have brought with them from their homes while the students socialize.

Because of East Lansing’s central location in the state, many students regularly return home on weekends and keep in close contact with their social networks from home. From the students that were interviewed for this project, a striking observation is that about three quarters of the students planned to return back to where they were from either directly after graduating from Michigan state or after working in a larger city for a while (particularly those who came from small towns). Because of East Lansing’s proximity to Chicago and Detroit, many of the participants in the study expressed interest in going to one of the two cities for at least a brief period to work before

returning to where they grew up later in their adult lives. All but five out of 66 students who were interviewed stated that their long-term plan was to live somewhere within the state of Michigan and one of those five had plans to permanently live in Chicago. This trend is important because it shows a conservative population who have no need to change their linguistic norms, so they be more resistant to outside linguistic changes when confronted by speakers from different speech from their own. Labov's (1972) study of Martha's Vineyard found that people who shared a negative attitude towards Martha's Vineyard and those who wanted to leave the island were more likely to use the mainland dialect, while those who had positive attitudes towards Martha's Vineyard and those who expressed a desire to stay were more likely to use the local dialect. In the case of Michigan State students, we have students who are using local dialect (that is a change from below) who largely express positive attitudes towards where they are from (even if they do not particularly associate an accent with the place) and express a desire to return to those communities, so we would still expect them retain features of the Northern Cities Shift, even in cases where there may be a growing awareness of the change.

2.2 Participants

Out of a total of sixty-six interviews, data from thirty-three respondents are included in the analysis presented here. Table 2.1 shows the final thirty-three respondents, each participant's pseudonym, sex, age and major.

Table 2.1 – List of Participants

Pseudonym	Sex	Age	Major
Darren	M	18	Linguistics
Joshua	M	19	Spanish
Dave	M	21	Political Theory
Pete	M	20	Economics
Aaron	M	20	Mechanical Engineering
Paul	M	20	Biosystems Engineering
Trevor	M	20	Microbiology
Mike	M	23	Advertising
Matt	M	21	Physiology
Doug	M	21	Elementary Education
Shawn	M	19	Com. Sciences & Disorders
Robbie	M	20	Supply Chain Management
Dan	M	20	Physics
Ted	M	19	Undecided
Brendan	M	21	Undecided
Shelly	F	21	Geology
Lisa	F	20	Spanish
Alley	F	18	Education
Annie	F	21	Com. Sciences & Disorders
Donna	F	21	Communications
Dana	F	22	Nursing
Jill	F	20	Advertising
Lindsey	F	21	Human Biology
Jessie	F	21	Advertising
Mary	F	21	Interior Design
Michelle	F	20	Nursing
Emily	F	20	Speech Pathology
Cathy	F	21	Elementary Education
Cayla	F	20	Human Resources
Lynn	F	19	Journalism
Karen	F	19	Math Education
Tracy	F	19	Spanish
Kimber	F	20	Elementary Education

Table 2.1 shows that participants are from a wide variety of majors and that all participants are between the ages of 18 and 23.

2.2.1 Demographic Constraints

Participants had to fulfill four criteria to be included in the project. First, both of the participant's parents had to be from Michigan and second, the participants had to have lived in Michigan for their whole lives. The primary reason for these exclusionary criteria was to minimize the influence of non-NCS vowel systems on participants' vowel systems. Studies that have examined the role that parents' accents have on dialect acquisition have had conflicting conclusions. In a 2002 study in Toronto, for example, Jack Chambers discusses a phenomenon he labels as the "Ethan Experience," where the son of Eastern European immigrants to Toronto never acquired his parents' accent-features, not even for isolated words. Chambers discusses that Ethan was not consciously aware of his parents' foreign-accented English until "well into his school years." Based on this, Chambers concludes that children may have some type of auditory "blindness" that help them acquire dialectal features of their peers rather than their parents. Hazen (2002) has also reported a similar innate "accent-filter" in dialect and language convergence. Other studies, however, have concluded that children are influenced by their parents' accents. Deser (1991), for example, studied the accent of children who came from families where one parent was from Detroit and the other was from the South. She found that the children from these families still had Southern speech features at least into adolescence and that younger children were more influenced by their parents' speech than older ones. This study is in stark contrast to Ethan, who even as a child exhibited none of his parent's non-native speech features. The criteria of the participant needing to have lived their entire lives in Michigan and

having both of their parents from Michigan eliminated seventeen out of the sixty-six participants.

The third demographic constraint was ethnicity. Only European American speakers were included in the final data presented in this study. The reason for this constraint is because of the known influence of ethnicity on the use of NCS variants (See Section 1.3.1.2 for further discussion). Incidentally, only three additional speakers were eliminated from this criterion because the first two criteria had already eliminated some speakers.

The last demographic constraint on participants was that all speakers had to self-identify as being from the Detroit metropolitan area (usually as “Metro Detroit”). The main reason for this constraint was to ensure that the speakers were coming from an area that has been shown to be influenced by the Northern Cities Shift. Many studies (e.g. Ito 1999, Callary 1975) have shown the slower rate of progression of the features of the shift into less populated areas. The Metro Detroit area not only has a large population, but the NCS has been extensively documented in the area. Additionally, the use of “Metro Detroit” identifies a local social identity. Besides the use of these constraints, one additional speaker was eliminated as a result of a corrupted sound file.

2.3 Field Work, Data Handling, and Data Processing

The participants in the study were recruited through classes offered by the Center for Integrative Studies in the Arts and Humanities (IAH) at Michigan State University from November 2008 through November 2009. The IAH classes are general education classes that all students are required to take at the university. The reason why IAH

classes were chosen is because of the large amount of variation in student majors that are present in such classes. Porter and Umbach (2006) found that personality can greatly influence a student's choice of major and career path. If certain personality types are drawn to certain fields of studies and thus certain classes, then general education classes that all students must take will offer the widest range of personality traits, which are the major variables under study in this project. Participants that were recruited came from backgrounds as diverse as physics, advertising, linguistics, interior design, nursing, engineering, and education. The majors of each of the participants are summarized in Table 2.1 in the preceding Section 2.2.

Each participant completed a survey on an op-scan form that contained demographic information and an assessment of 60 personality traits based on Bem's Sex Role Inventory (Appendix A). For the personality traits, the participants were asked to rate how well each trait applied to them on a 7-point Likert scale, with 1 indicating that the term does not at all describe the individual and 7 indicating that the trait describes the individual very well.

Self-Rating Sample:

How well do the following terms describe you on a scale from 1 to 7.
(1 meaning the term does not describe you at all and 7 meaning that the term describes you very well)

affectionate:

1 = I am not at all affectionate ----- 7 = I am very affectionate

Participants were encouraged to use the full range of the scale, not just 1 or 7. The full survey that contains all of the demographic and personality questions can be found in Appendix B.

In addition to the survey, each participant also participated in a recording session. The data presented in this study are based on recordings of each speaker reading a word list of 109 words (Appendix C), but participants also recorded a reading passage (Appendix D), and a conversational question-based sociolinguistic interview (Appendix E). In total, the study lasted anywhere between 20-60 minutes (mostly based on how long it took them to fill out the survey and willingness to talk). In total, over 2,000 NCS tokens were measured in various phonetic environment and over 3,000 vowels overall from all speakers were measured from the wordlist.

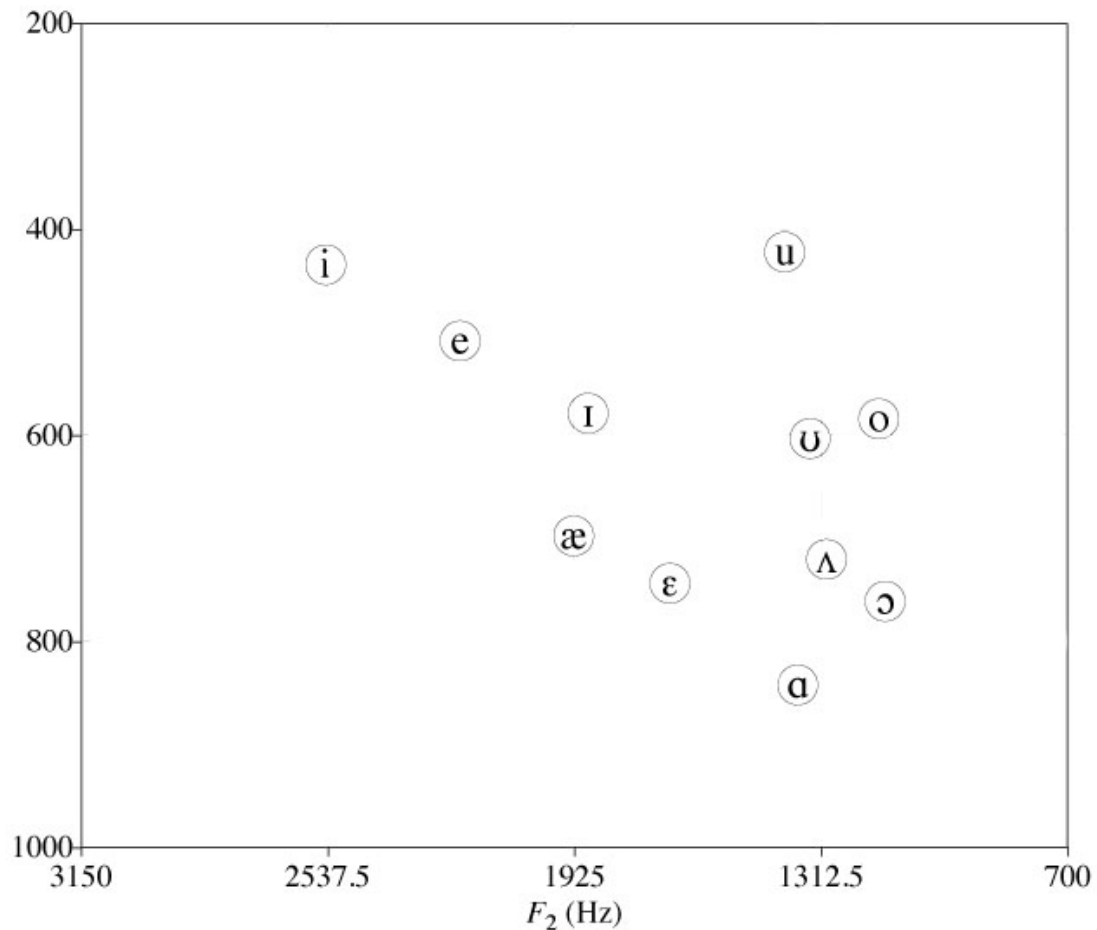
Because the Northern Cities Shift is a change from below the level of social consciousness, people are generally not aware of its presence in their own speech or in the speech of others. Ash (1999) discusses that in changes from below, innovative speech features tend to be constant across speech styles. As a result, the NCS has not currently been shown to be subject to stylistic variation, where speakers actively try to eliminate non-standard features of their speech in careful speech, such as the speech in a reading passage or word list. Because of this fact, the use of data from a wordlist should not only give credible results, but even if it were subject to stylistic variation, it would represent conservative measures of the NCS because its presence here would likely indicate presence in more casual speech styles such as the reading passage or sociolinguistic interview as well.

All interviews were digitally recorded using an AT831b Audio-technica uni-directional clip-on microphone and a Digidesign MBox 2. Initial recordings were made at a 44.1 kHz sampling frequency and were then resampled to 10 kHz using the acoustic analysis software Pratt. For each vowel, measurements of the first and second formant were taken using the software program Akustyk for Praat. All vowel measurements for monophthongs were taken during the steady state of the vowel. For diphthongs, only single measurements were taken from a position just after the perceptual end of the transition from the preceding consonant. The data from all included speakers were then normalized using a Nearey (without F3) algorithm to produced regularized measurements.

2.4 Northern Cities Shifted English

Several features of the Northern Cities Shift can be seen by looking at the normalized means of all speakers in the project. Figure 2.1 shows the vowel space for these speakers.

Figure 2.1 – Normalized means of all speakers



In Figure 2.1, the vowels /æ/ and /ɛ/ show a complete reversal in height, with /æ/ having an F_1 value around 700. Labov, Ash, and Boberg (2005) consider a normalized F_1 value of 700 Hz or lower as indication of a Northern Cities Shift. In addition to the reversal of /æ/ and /ɛ/, Figure 2.1 also illustrates that /ʌ/ is produced further back than

/a/ and that /ɔ/ has lowered to a position below /ʌ/. These features are the same as the features of the “core area” of the NCS that was discussed in Chapter 1.

The use of the normalized means here allows for a direct comparison of individuals who have different overall acoustic ranges due to differences in formant range and pitch range. Normalization is especially useful in the comparison of women and men, where these differences are even larger. The need for this normalization is illustrated by comparing Figure 2.2 and Figure 2.3. The pre- and post-normalized means of men are shown in circles and the women are shown in squares.

Figure 2.2 – Pre-normalized means of men versus women

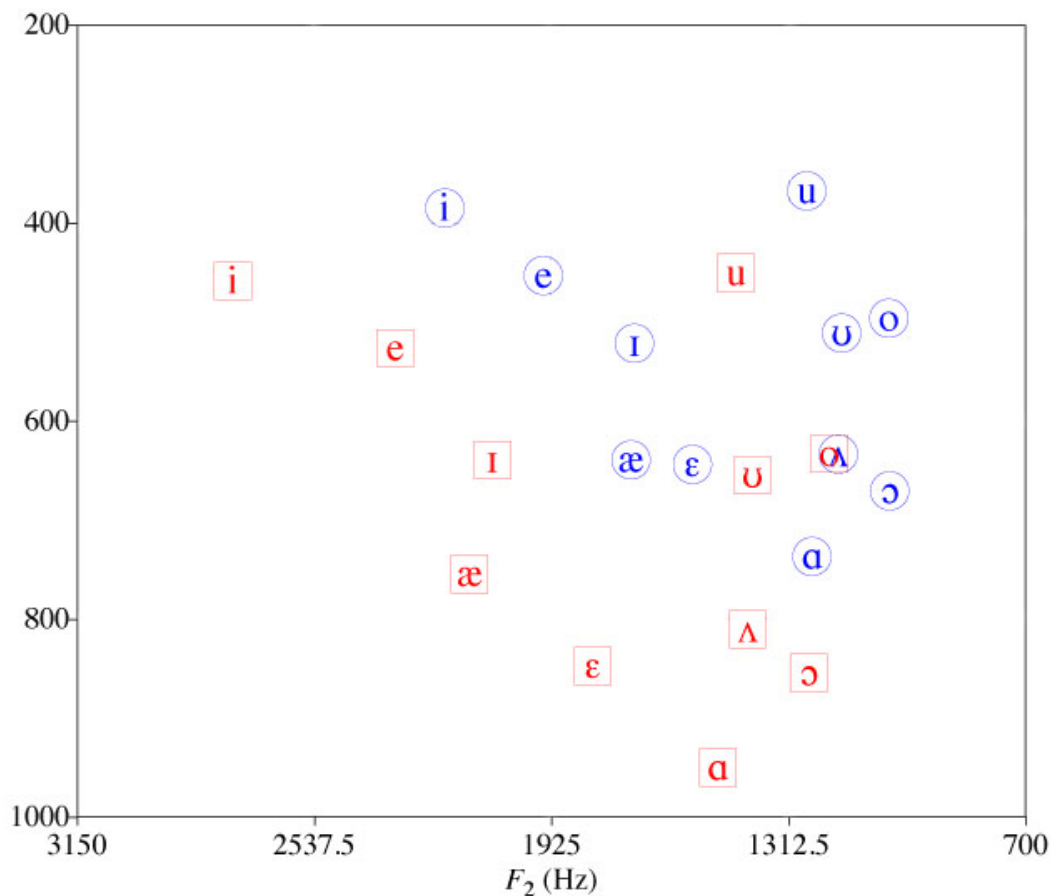
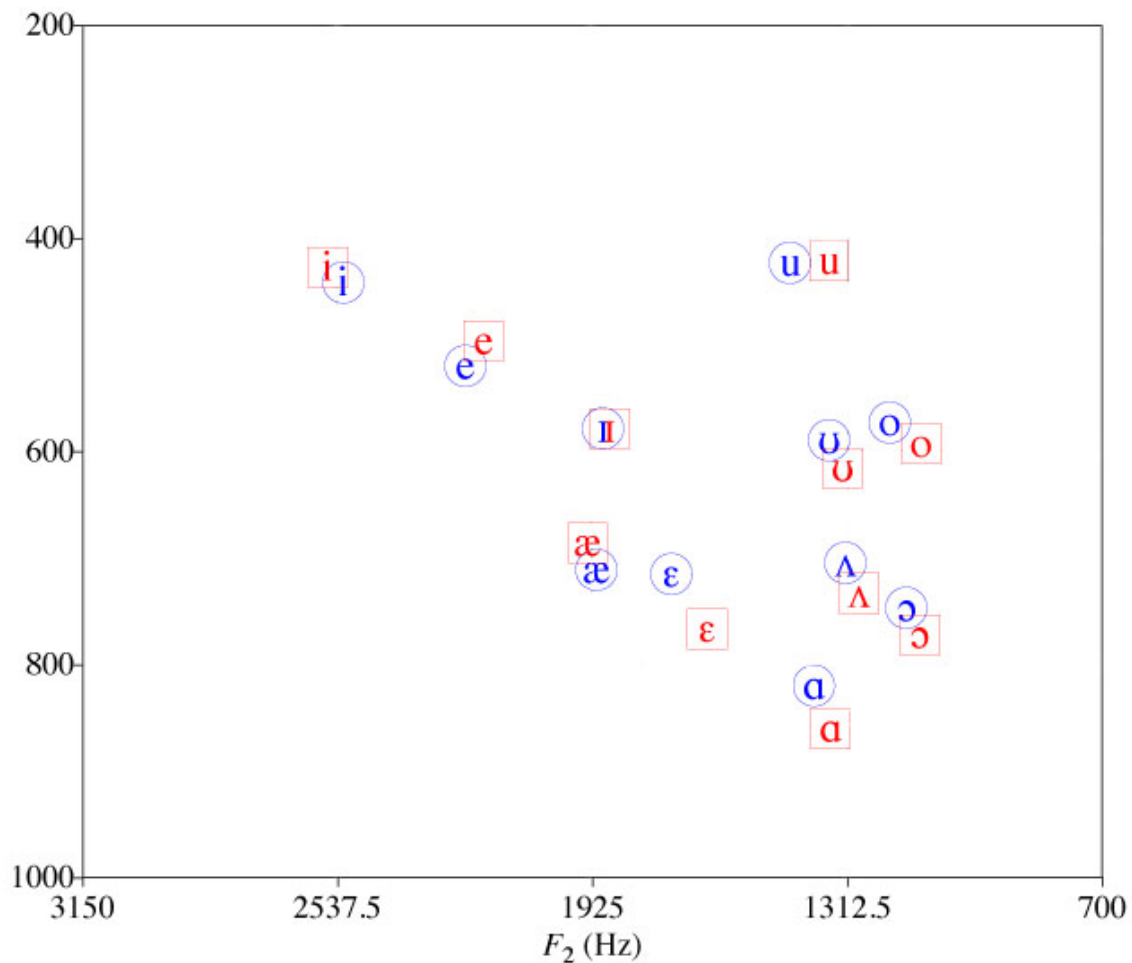


Figure 2.3 – Normalized means of men versus women



Although the vowel configuration is similar to men and women in Figure 2.2, a comparison of the F1 and F2 formant vowels of the vowels as indication of progress and influence of the Northern Cities Shift is impossible due to the difference in acoustic ranges present. The normalized data shown in Figure 2.3, corrects this and we can see how strikingly similar the overall vowels of men and women are in this project. Since sex differences do not seem to play a large part, this will give even better testing grounds for evaluating the influence of personality. The largest difference between men and women

are found in /æ/ and /ɛ/. The overall means for men show that these vowels have almost identical F1 values, while for women, /æ/ is slightly raised and fronted and /ɛ/ has lowered and backed. This trend is consistent with the overall tendency for women to be more advanced in the NCS. Although there is no perfect normalization technique that will eliminate all and only physiological differences between speakers, the use of normalization still aids in cross-study comparison, especially where the same normalization algorithm is used. The Nearey algorithm used here is the same used in the speech software program Plotnik, that was created and developed by William Labov and popularly used within the field of sociophonetics. These normalized means for the F1 and F2 of the NCS vowels will be correlated with self-ratings of personality traits, and the results will be presented in Chapter 3.

2.5 Gender Indexes

Two gender indexes were also constructed for correlation with vowel production. A Femininity Index (F-Index) and Masculinity Index (M-Index) will be used to illustrate two continua upon which an individual may lie with respect to overall identification with masculine and feminine traits. While the F-Index and M-Index are not direct measurements of femininity and masculinity respectively, they represent an overall trend with respect to how individuals self-identify with factors that are correlates of gender, which is a dynamic structure, as opposed to these stable variants (see discussion in Chapter 1). Each index is computed by averaging the self-rated scores for the traits that are more desirable for women (to create the F-Index) and traits that

are more desirable for males (to create the M-Index). Each participant is assigned an F-Index and M-Index score based on the self-ratings survey. The self-ratings ranged from scores of 1 to 7 (with a score of 1 indicating that an individual is not at all described by a trait); thus, the higher to score on the F-Index, the more a person identifies with traits that are correlated with femininity. Likewise, a higher M-Index score indicates identification of personality traits that correlate with masculinity. The gender index scores for each participant is shown in Table 2.2 and Table 2.3.

Table 2.2 – Gender Index Scores for Men

Pseudonym	M-Index	F-Index
Paul	6.70	5.50
Dave	6.40	4.70
Mike	6.40	4.50
Matt	5.95	5.20
Trevor	5.90	4.30
Pete	5.70	4.90
Doug	5.70	4.65
Aaron	5.57	3.95
Brendan	5.50	4.60
Dan	5.20	4.50
Joshua	5.15	4.85
Robbie	4.85	4.55
Darren	4.45	4.85
Shawn	4.45	4.65
Ted	3.75	4.30

Table 2.2 shows the index scores for the male participants. One thing to notice is that there is no correlation with the M-Index and F-Index. In other words, it is not the case that the higher the M-Index, the lower the F-Index (and vice versa). This same pattern holds true for the women (shown in Table 2.3). Additionally, Table 3 shows that generally the M-Index score for each of the males is higher than the F-Index score, with

the exceptions of Darren, Shawn, and Ted. This pattern is not found among the women, shown in Table 2.3.

Table 2.3 – Gender Index Scores for Women

Pseudonym	M-Index	F-Index
Cathy	3.85	6.15
Shelly	5.20	5.75
Alley	4.30	5.50
Mary	5.15	5.45
Annie	5.15	5.35
Dana	4.60	5.30
Michelle	5.50	5.25
Lindsey	6.10	5.00
Cayla	5.40	4.95
Donna	4.55	4.90
Jessie	6.30	4.90
Lynn	5.35	4.85
Kimber	5.35	4.85
Karen	5.25	4.80
Lisa	4.40	4.60
Jill	4.30	4.65
Emily	5.65	4.40
Tracy	5.25	4.30

For the women, nine of the 18 women have higher M-Index scores than F-Index scores (Michelle, Lindsey, Cayla, Jessie, Lynn, Kimber, Karen, Emily, and Tracy). This difference between men and women can be found by comparing the overall means of the gender indexes based on sex. Overall, in relation to the F-Index, men's mean is a 4.66, while the women's mean is 5.05. A t-test shows these means to be statistically significant ($p < 0.01$). If we look at M-Index scores, however, there is no statistically significant difference between the scores. The M-Index means for men is 5.4 versus 5.1 for women ($p = .1624$). This pattern may perhaps be explained in terms of

androcentricity. If male behavior in a male-dominated society is taken as a norm, then a female behaving like a male will be viewed as also following the norm. Males, however, will be less likely to pattern like women, however, because it would be against the norm; i.e., there is more of a stigma against males following behavior patterns of women (e.g., the difference in stigma of women wearing pants in the United States versus men wearing dresses). For these traits, androcentricity would predict that females would be more likely to have traits that are seen as masculine (thus given them a comparable M-Index score) than males would identify with traits that are seen as feminine.

2.6 Pilot Study

A pilot study was conducted in 2006-2007 in order to see if a personality trait-based approach to examining language change would reveal any results. The pilot study consisted of approximately nine females and seven males from Detroit, Lansing, and Flint. The same methodology was examined with the exception of only 20 traits used (10 masculine and 10 feminine traits). Any important differences between the pilot study and this extended study will be discussed in Chapters 3 and Chapters 4.

2.7 Chapter 2 Summary

This chapter has outlined the participants, the social settings, the social and linguistic variables, and the methodology for the study. Chapter 3 presents the results from multiple regression analyses performed on the normalized F1 and F2 of NCS vowel

tokens across the self-ratings of personality traits for the participants. Chapter 4 continues the presentation of results by looking at differences between sex groups.

CHAPTER 3: OVERALL STATISTICAL RESULTS

This chapter begins with a discussion of the personality traits that influences the pronunciation of NCS vowels / æ, ɑ, ɔ, ε, ʌ, ɪ/. Self-ratings of each individual personality trait will be correlated with mean F1 and F2 values of the vowels for all of the speakers as well as correlations with overall M-Index and F-index scores. Both individual effects and trait interaction will be explored for the vowels for all speakers followed by a discussion of overall findings. In the discussion of traits, square brackets will be used to indicate the results of a trait based on the BSRI.

3.1 Results of / æ /

The first step of the Northern Cities Shift is the fronting and raising of / æ /. The following section outlines the statistical results for this vowel by first examining the correlation of traits with the F1 of / æ /, then the F2 of / æ /, and then finally giving an overall discussion of the first step of the NCS. Since previous research on the Northern Cities shift have found that nasal environments promote the raising of / æ / (see Roeder 2007), only non-nasal tokens are considered in the analysis presented in this chapter.

3.1.1 F1 of / æ /

There is an inverse correlation of F1 values with vowel height, which means the higher the F1 value, the lower the vowel will be. Since the first stage of the NCS involves the

raising of / æ /, a higher F1 value will indicate a more conservative production of the vowel given this inverse correlation. An examination of individual traits that significantly correlate with the F1 of / æ / ($p < 0.05$) shows that only four traits influence the F1: [cheerful] ($p = 0.0065$), [self-reliant] ($p = 0.0178$), [dominant] ($p = 0.0268$), and [reliable] ($p = 0.0388$). Of the traits, [cheerful] has the strongest correlation, which is illustrated in Figure 3.1 below.

Figure 3.1 – Correlation of Cheerfulness with F1 of / æ /

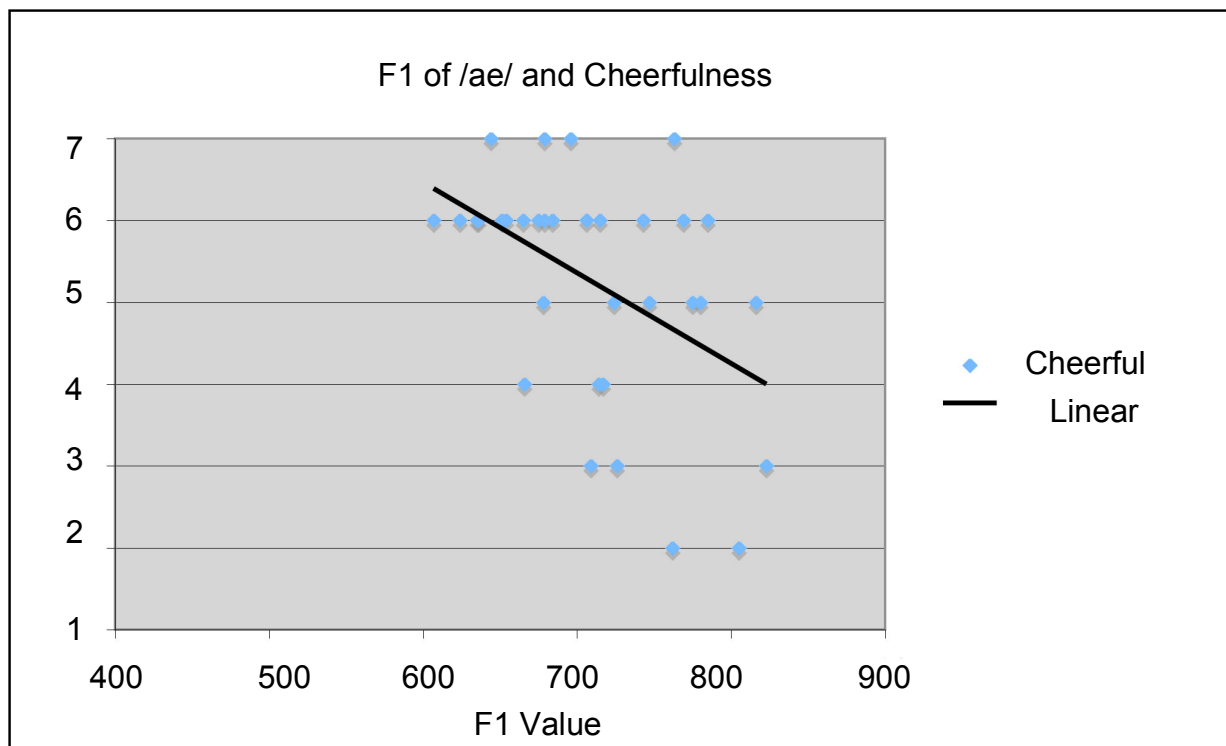


Figure 3.1 shows that the more cheerful an individual self-identifies as, the more innovative vowel production that the speaker will make (or the higher the vowel height

will be, shown by the lower F1 value). [Cheerful] is the only feminine trait that shows a correlation with vowel height. This single trait alone can account for nearly 22% of the variation of F1 values among all of the speakers.

The next strongest correlations, [self-reliant] and [dominant], are both masculine traits. For both of these traits, a higher self-rating also corresponds to a more innovative vowel production. [Reliable] is the only gender-neutral term to show a correlation with the F1 of / æ /. No other individual trait shows a statistically significant correlation. Additionally, neither the M-Index nor the F-Index shows any significant correlation with the F1 of / æ /.

Table 3.1 shows a regression model that shows the interactions of the traits that have the highest predictive importance to explain the variance of the F1 of / æ /.

Table 3.1 – F1 of / æ / Regression Model

R ² = 0.645		
Variable	T	P (2 Tail)
Cheerful	-3.8383	<0.0007
Independent	-2.4222	<0.0227
Unpredictable	-2.3548	<0.0264
Understanding	2.8536	<0.0084
No Harsh Language	-3.8229	<0.0007
Gentle	1.8706	<0.0727
Analysis of Variance: F-Ratio=7.8823, p<0.0001		

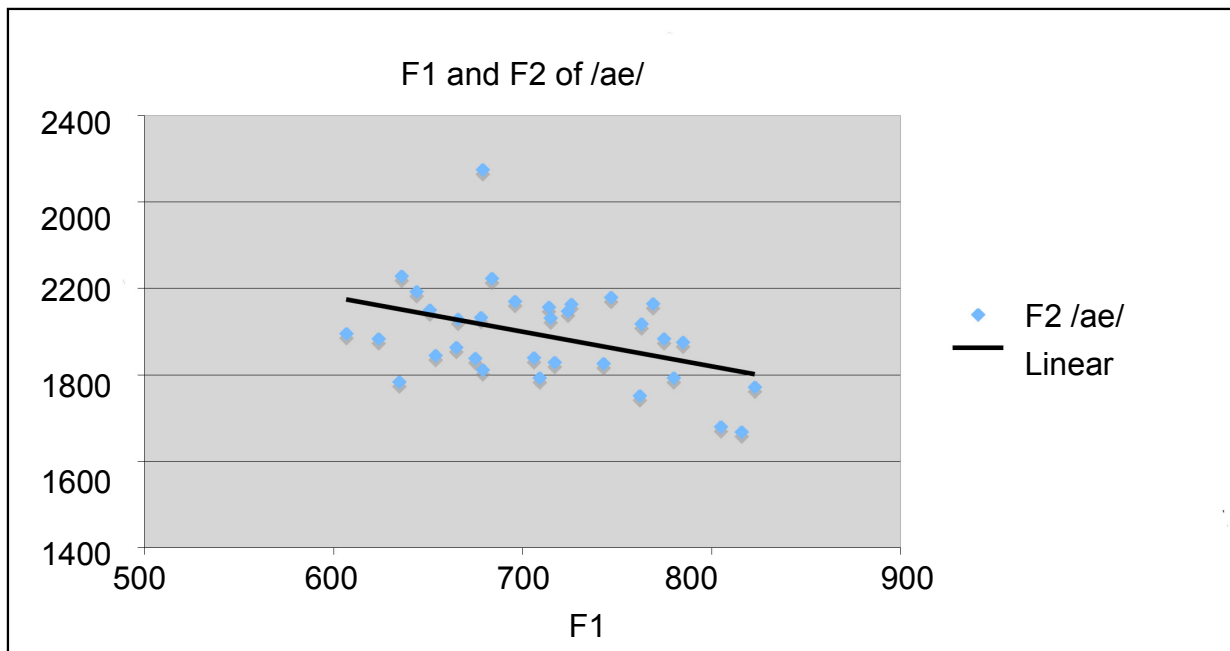
Table 3.1 shows that self-identification as [cheerful] along with identifications with [independent], [unpredictable], [understanding], [does not use harsh language], and [gentle] can account for almost 64% of all variance in speakers F1 values of / æ /. The interactions in this table show that individuals who self-identify highly as [cheerful], [independent], and [unpredictable] would be the one who is most likely to use an innovative vowel production (a higher vowel, or one with a lower F1). The appearance of traits in the model (as opposed to them appearing individual regressions) is important because it shows that each trait alone is contributing something additional to the model. For example, the reason why [reliable] is not contributing any additional predictive power to the model that the other traits are – when [cheerful] interacts with [independent], the intersection of these traits accounts for the same or more variation than an individual trait alone. Although these leaders are cheerful, independent, unpredictable, and do not use harsh language, they are not necessarily gentle or understanding. Most of these traits ([cheerful], [understanding], [does not use harsh language], and [gentle]) are traditionally viewed as more desirable traits for women to have; independent is the only masculine trait, while unpredictable is a gender-neutral trait.

3.1.2 F2 of / æ /

In the first step of the NCS, in addition to raising, / æ / also fronts. For the F2 dimension, the higher the F2, the more forward the position, which would correspond to a more advanced NCS token. Since both fronting and raising are part of the first stage of NCS,

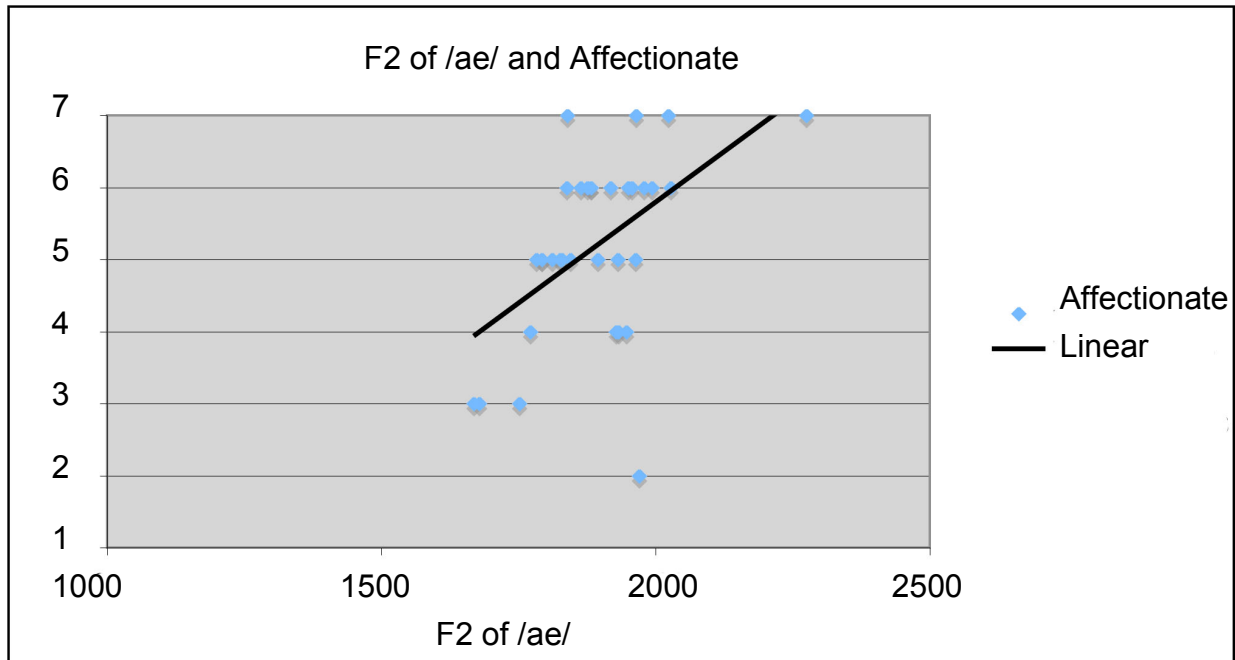
and since fronting has previously been found to precede vowel raising (Ito 1999), it is unsurprising that there is a correlation between F1 and F2 values for the vowel—the higher the F2 of /æ/, the lower the F1 value is found to be, i.e., the more front the vowel is, the higher it also is. A regression analysis shows this to be a significant correlation ($p=0.0182$). This finding is illustrated in Figure 3.2.

Figure 3.2 – F1 and F2 values of /æ/



As with the F1 of the vowel, there were four traits that showed significant correlations of self-identification with the trait and F2 values of /æ/: [affectionate] ($p=0.0023$), [cheerful] ($p=0.0040$), [dominant] ($p=0.0099$), and [moody] ($p=0.0393$). [Affectionate] had the strongest correlation, with an R^2 value of 25.8%, while cheerful was closely following with an R^2 value of 23.8%. Figure 3.3 shows the correlation of self-identification as [affectionate] with the F2 value of /æ/.

Figure 3.3 – Correlation of Affection with F2 of /æ/



For [affectionate], [cheerful], and [dominant], all of these traits showed a positive correlation with the F2 value—the higher an individual self-identified with the trait, the higher the F2 value, which indicates the more innovative NCS productions of the vowel. Of these three terms, [cheerful] and [dominant] were also shown to be important factors that influence the F1 value of the vowel. For [moody], which had the weakest correlation, there is an inverse correlation of self-identification and the F2 value of the vowel—the more moody a person identified as, the more likely they were to use a more conservative vowel production, which is opposite of the findings with [cheerful], though the correlation is not as strong. As with the F1 of /æ/, neither the M-Index nor the F-Index showed any correlation with F2 values in this stage of the NCS.

Table 3.2 shows a regression model for the F2 value of /æ/ that incorporates all of the traits and shows the interaction of the traits.

Table 3.2 – F2 of / æ / Regression Model

R ² = 0.789		
Variable	T	P (2 Tail)
Affectionate	6.4499	<0.0001
Strong Personality	6.0950	<0.0001
Loyal	3.3276	<0.0026
Dominant	4.7088	<0.0001
Solemn	-2.5916	<0.0155
Tender	-2.5229	<0.0181
Analysis of Variance: F-Ratio=16.2065, p<0.0001		

As Table 3.2 shows, this model that contains only 6 traits can account for nearly 80% of the variation that is found in the F2 values of / æ / among all speakers. Of these traits, as was found in the F1 regression model, the majority of the traits are traditionally more desirable for women to possess ([affectionate], [loyal], and [tender]).

3.1.3 Discussion of / æ /

Overall, the results for the F2 of / æ / are stronger than the results of the F1, though the results are similar. With individual traits, the F2 had the single term that could account for the highest amount of variation with the R² value of [affectionate] accounting for 25.8% of the variation. Additionally, the F2 model that incorporates all of the terms accounts for 78.9% of formant variation, which is higher than the R² value for the F1 model, which

accounted for 64.5% of the variation. These more robust results are expected if / æ / fronting precedes raising.

The individual traits that show the strongest correlations are traditionally feminine traits – [cheerful], [affectionate], and [understanding]. It may be because of the role of these traits that that overall, women tend to lead the Northern Cities Shift, since these traits are more desirable for women than for men to possess. In addition to these terms, the male terms dominant and self-reliant also show interactions. The two terms that had significant correlations with both F1 and F2 values were [cheerful] and [dominant]. These results are consistent with the pilot study, which found for the first stage of the NCS, individuals who self identified as cheerful, affectionate, and dominant were the ones who had the most advanced NCS productions. In the pilot study, which only contained 12 speakers, the traits [masculine] and [feminine] also showed an influence, which was not replicated here. One explanation for this is that previously there may have been an insufficient number of participants and number of traits included. [Feminine] and [masculine] were the weakest traits to show any type of influence among the individuals studied, and it was strong association with either of these terms that disfavored the use of more advanced productions of / æ /.

The fact that the Gender Indexes showed no correlation in this study is also consistent with the results of the pilot study. The use of such indexes may over-simplify the role of gender, which will be explored more in Chapter 4. Although three female individual traits were positively correlated with vowel use, there were 17 traits that showed no affect and the aggregate of these results is perhaps what results in the failure of the gender indexes. This suggests that there may be more importance to the

use of individual traits and how all traits (feminine, masculine, and neutral) interact rather than treating feminine traits separately from masculine traits.

Although the F1 and F2 regression models that incorporate all of the traits do not contain all of the same traits, the combinations provides a very similar portrait of an individual who would be leading the first stage. A leader, as I use it here, refers to an individual who uses more advanced NCS variants than her or his peers as opposed to someone who is an earlier adopter of the shift or one who participates in later stages of the shift. For those with an advanced F1, the individual could be described as cheerful, independent, and unpredictable, while those with an advanced F2 would be affectionate, dominant individuals with a strong personality, who are not solemn. Both of these models give a picture of an independent and outspoken person, who may not be the most gentle person, but is someone who is loyal and caring. This picture supports Labov's findings of leaders of linguistic change. Labov (2001) highlights the role of the individual with portraits of three leaders of linguistic change, illustrating what these have in common. One of the individuals he focuses on is Celeste, a leader of the short *a* vowel shift in Philadelphia. In his portrait of Celeste, he describes her as "full of wit and energy, quick to speak her mind and correct injustice". He tells stories that highlight her role in the community and how others respect her and respond to her. Labov describes how the strong local accent is "submerged in the impression of a powerful personality, an arranger and controller of the world of social relations." While the use individual traits can be important in understanding the social meaning behind a variable (and if the trait is gendered, perhaps why women or men overall tend to lead the change), the

interaction of the traits is what reveals those who would be the most active uses and spreaders of local linguistic norms.

If individual traits do convey a social meaning, this would suggest that [cheerful] and [affectionate] would more closely approximate the local meaning of (at least the first stage of) the Northern Cities Shift. Support of this suggestion can be found from the sociolinguistic interviews from the pilot study. During the pilot study, some of the questions that were asked concerned what qualities participants thought Michiganders have, what stereotypes others have of Michiganders, and what stereotypes they had about people from other parts of the country⁵. Many of the responses during the pilot study were similar to either Kim's (female, age 19) or Angela's (female, age 20) responses:

Kim: "... people from Michigan are just really friendly and warm, but you know, people from the East Coast, I stereotype as being rude, so I dunno."

Angela: "... most say that the most they knew of Michigan is from like *8 Mile*, which I don't think gives an accurate portrayal of people from Michigan..."

These two responses combined with other discussion reveals a struggle for representing a Michigan identity for individuals from the Detroit area. In the current study, all but three of the participants wanted to move back to where they grew up at some point (the others were either unsure or wanted to move closer to family in other areas). Some indicated that they would like to live in Chicago for a period, which also

⁵ This question was eliminated for the current study due to time constraints—the survey portion of the pilot study contained only 20 traits, rather than 60. So that participants did not experience fatigue, some of the interview questions were eliminated to shorten the overall time.

has the NCS, because people are so nice and friendly for a big city, but at some point they thought they would be back in Michigan—Largely, everyone had a positive association with Michigan and wanted to live around the Detroit area, but at the same time, they dislike the negative associations that plague Detroit and big cities on the East Coast. The use of the Northern Cities Shift allows access to an identity with other big cities in the region, while distancing themselves from what some participants refer to as the “rednecks from the U.P.” (the rural Upper Peninsula of Michigan who have a distinct accent) and rude East Coasters. Additionally, it allows speakers to distance themselves from negative aspects of crime and violence in Detroit, which is depicted in movies like *8 Mile*. Preston (1996) shows that even though speakers from Michigan rate their speech as the most standard, they do not believe their speech to be as pleasant as speech from the South, but the use of the NCS may provide some distance from the unpleasantness of the speech of other Northerners with the representation of the local dialect by pleasant (affectionate and cheerful) individuals.

3.2 Results for / ɑ /

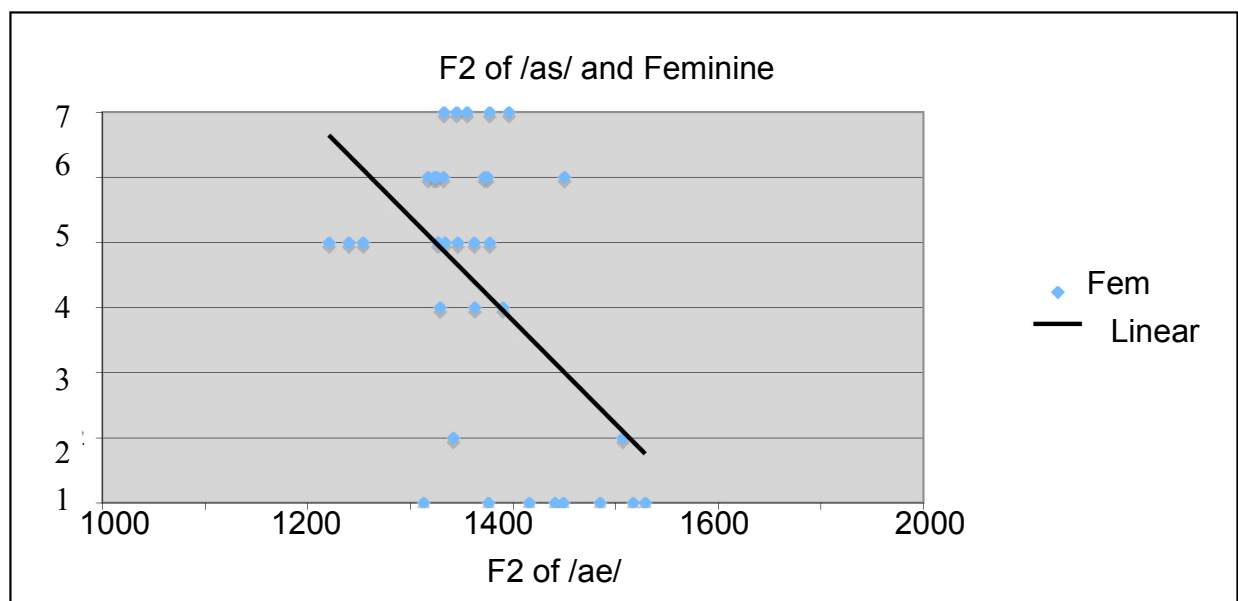
The second stage of the Northern Cities shift is the movement / ɑ / to a position of canonical / æ /. For this section, the F2 value of the vowel will be correlated with the self-ratings of individual traits followed by a discussion of these results. Since fewer individuals show examples of further stages of the NCS after the first stage, interactions among the traits will not be discussed in subsequent sections of this chapter, but will be discussed further in Chapter 4. Additionally, to explore the discussion to whether the

NCS should be viewed as a chain shift or not, the influence of the production of / æ / will also be considered as a variable. The remainder of this chapter will focus on the role of individual traits, which may provide cues as to the social meaning of each stage of the Northern Cities Shift.

3.2.1 F2 of / æ /

For the F2 of / æ /, there are only three variables that showed any significant correlation with the vowel formant value: [feminine] ($p=0.0018$), the F1 of /æ/ ($p=0.0046$), and [understanding] ($p=0.0095$). The strongest correlation was found with self-identification with [feminine], which had an inverse correlation with F2 value—the more [feminine] a person identified, the *less* likely they were to front their / æ /, shown in Figure 3.4.

Figure 3.4 – Correlation of Femininity and F2 of / æ /



A second factor that influences the F2 value of / ɑ /, the second stage of the NCS, is how a speaker is producing /ae/, the first vowel of the shift. The F1 of /ae/ showed an inverse correlation with the F2 value of / ɑ /, which indicates the higher that /ae/ raises, the more front / ɑ / is produced.

The third variable that influenced F2 production of / ɑ / was self-identification with the trait [understanding]. For [understanding], a high self-identification as [understanding] leads to the use of more innovative NCS variants.

As with the first stage of the NCS, the M-Index and the F-index showed no significant correlation.

3.2.2 Discussion of / ɑ /

There are far fewer variables that show significant correlations with vowel formant values for the second stage of the NCS. Self-identification with only two of the traits yields statistical significance. Both of these traits—[feminine] and [understanding]—are traits that are traditionally more desirable traits for women and are found in Bem's F-Index. These results are consistent with the results of the pilot study, which found a tendency for identification with feminine traits to influence vowel production more than identification with masculine traits, regardless of whether the traits had a positive or inverse correlation. Additionally, the results are consistent with the pilot results that found that while identification as [feminine] and an inverse correlation, other traits that are traditionally more desirable for women show a positive correlation.

A reason for the difference between the negative correlation with [feminine] and positive correlation with [understanding] may be found by an examination of leadership ability as presented in Bem's (1974) study. Leadership ability is traditionally a quality that is more desirable for men to possess and as such, leadership was even assigned as masculine traits by the participants in Bem's study as [leadership ability] and [acts as a leader.] The marking of the behavior of "masculine" may have the result of marking it into opposition to the individual trait [feminine]. The portrait of the outspoken leader who acts to correct social injustice, such as Celeste in Labov's study, may possess many feminine traits, but is different from the "solemn," "shy," and "tender" person that is traditionally thought of as "feminine." These two different types of individuals give us the difference between the linguistically innovative and linguistically conservative women. Perhaps an innovative woman will still have traits that are traditionally desirable for women, but may not necessarily identify as "feminine," while a conservative woman will be more likely to identify as "feminine" along with other traits desirable for women. For leadership ability here, again defined as having more advanced productions for a particular stage of the shift, those with more shifted NCS are likely to positively identify with feminine traits, but not highly identify with the trait [feminine]. Those who identify strongly with the trait [feminine] will have more conservative productions.

Another factor that was found to influence the production of the second stage of the Northern Cities Shift is how speakers produced the first vowel of the shift. The more speakers shifted their / æ /, the more likely they were to use a shifted variant of / ɑ /.

This result is an illustration of a chain shift par excellence—the movement of one vowel in a system sets off a chain reaction whereby other vowels also move in an attempt to

maximize perceptual space of a phonological system. In this case, the movement of /æ/ allows /ɑ/ to move to a less crowded space in the vowel system.

3.3 Results for /ɔ/

The third stage of the Northern Cities Shift is characterized by the lowering of /ɔ/ to a position to where an unshifted /ɑ/ appears. As with the previous stage, there were only two traits that showed significant correlations—[feminine] and [cheerful]. For [feminine], there was a positive correlation with self-identification of the trait and the F1 value of /ɔ/ (p=0.0199). This indicates that the more [feminine] a person identifies as, the more conservative production of the vowel because higher formant values indicate a lower vowel. This result is consistent with the results for /ɑ/, which were discussed in the preceding section. For [cheerful], there was an inverse correlation with self-identification and the F1 value of the vowel (p=0.0243). This indicates that the more [cheerful] a person identifies as, the more *innovative* the vowel production will be. This result is consistent with the results for /æ/.

Although these two traits are significant correlates of the F1 value of /ɔ/, a stronger correlation is shown with the production of /æ/. Both the F1 of /æ/ and the F2 of /æ/ show significant correlations with the F1 value of /ɔ/. For the F2 of /æ/ the p-value is equal to 0.0197. For the F1 value of /æ/, the p-value is equal to 0.0053. These results are important because they show how significant linguistic factors are over social factors for later stages of a chain shift. We would expect that vowels closer in

perceptual space to have a significant influence on how a vowel is produced (for example, the F1 of / ɑ / is significant with a p-value less than 0.0001) in order to maintain perceptual salience between a vowel, but the significance of a vowel further in perceptual space shows the importance of the vowels working as a system.

3.4 Results for / ε /

The next stage of the shift is characterized by speakers either lowering / ε / to a position to where canonical / æ / is or the backing of / ε / to a position closer to canonical / ʌ /. For this reason, this section will explore both the F1 and F2 values of / ε / and correlate them with self-identification of the BSRI traits. Correlations with other vowels will also be examined.

3.4.1 F1 of / ε /

For the F1 of / ε /, there were four traits that showed significant correlations with the vowel formant values: [individualistic], [feminine], [masculine], and [analytical]. For the traits [masculine] (p=0.0010), [individualistic] (p=0.0287), and [analytical] (p=0.0319), there was a negative correlation of self-ratings with vowel formant values; this indicates that the more masculine, individualistic, and analytical a person self-identifies as, the more likely they are to use innovative variants of the Northern Cities Shift. For [feminine], there was a positive correlation, which indicates that the more [feminine] a person is, the more likely they are to use a conservative production for the F1 of / ε /.

For the interaction with other stages of the shift, although there was no correlation with the first stage of the shift, the preceding stage showed a correlation. The more shifted an individual is with the lowering of / ɔ /, the more they will also lower /ε/ (p=0.0002).

3.4.2 F2 of / ε /

There were also four traits that showed significant correlations with the F2 of / ε / for the speakers: [masculine] (p=0.0021), [feminine] (p=0.0031), [gentle] (p=0.0397), and [soft-spoken] (p=0.0474). For [gentle], [soft-spoken], and [masculine], there was a positive correlation, which indicates that the more highly one self-identifies with these traits, the more likely they are to use the innovative NCS variants. For [feminine], there is a negative correlation, so the more feminine a person self-identifies as, the more likely the individual is to use less-shifted variants. For the F2 value of the vowel, there were no statistically significant correlations with previous stages of the NCS.

3.4.3 Discussion of / ε /

There have been few studies that account for behavior of / ε / in the Northern Cities Shift. Since it is a later stage of the shift, there tend to be fewer participants in many communities to provide enough of a sample to draw strong results. Many studies (e.g. Gordon 2000) focus on phonological factors that influence vowel production or only examine gender as a social variable of study (e.g. Eckert 1998, 2001). One of the difficulties in assessing the behavior of the vowel is that unlike other steps, there is more than one general trajectory a speaker may use for this stage of the NCS—a

speaker may primarily lower the vowel, primarily back the vowel, or a speaker may do a combination of both. Individual speakers in this current study also exhibit all of these patterns, yet the results presented here, provide a new insight to the behavior of the vowel.

The main similarity for both the F1 and F2 of the vowel is how self-identification with [feminine] and [masculine] influence vowel production. For both the F1 and F2 dimensions, identification as not only not [feminine], but also [masculine] lead to innovative vowel productions. For the other vowels of the NCS that have been examined thus far, identification as [feminine] has had a conservative effect on vowel production (though identification with other feminine traits led to innovative use), but identification as [masculine] has not had an effect. Still, these results are consistent with the previous discussion of the role of feminine presented earlier in the chapter.

The importance of these results, however, lies in the difference in the traits that influence innovative forms of / ε / for the F1 and F2 dimensions of the vowel. The traits that influence F1 of / ε / are both masculine traits ([individualistic] and [analytical]), while the traits that influence the F2 of / ε / are both feminine traits. This result may be a reflection of an observation that was made by Labov (2001) -- sound changes led by men tend to occur along the F1 dimension, while sound changes led by women tend to occur along the F2 dimension. Chapter 4 will discuss the similarities and differences between women and men with respect to participation in the Northern Cities Shift.

3.5 Results for / ʌ / and /ɪ/

Stage 5 of the NCS is characterized by the retraction of / ʌ /, so the F2 value of the vowel were correlated with self-identification of the traits for this section. No traits or production of previous stages were found to significantly influence the production of /ʌ/.

For the last stage, / ɪ / lowers and backs to a position similar to canonical /ε/, so both the F1 and the F2 of the vowel were correlated with self-rating for the traits as well as productions of previous stages. For the last stage, there were no statistically significant correlations of traits with either the F1 and F2 dimensions. The reason that there were no significant results with the last stages may be due to the fact that there are speakers that are participating in these later-stages, as shown by the vowel plot of the average speaker means for the vowels in Figure 2.3. There is more robust evidence of speakers participating in the first few stages of the Northern Cities Shift that was discussed in Chapter 2.

3.6 Chapter 3 Summary

This chapter has shown that personality plays an important role in language use. Rather than examining dynamic aspects of a social identity, such as gender, personality traits, which have been shown to be more stable measures across social situations, can be used in order to account for differences in language use among individuals in the community. Across the various stages of the Northern City Shift, the traits that overall had the largest influence on language use were traits that are traditionally more desirable for women to possess—[cheerful], [affectionate], and [feminine],

[understanding]— though for individual stages there was also some influence from masculine and gender neutral traits. The fact that systematically the traits that were more desirable for women had the strongest correlation with vowel production can be used to explain why women tend to lead the Northern Cities Shift.

The results from this chapter also highlight the importance of examining individual traits as well as looking at the intersection of the traits. Individually, the traits may be more closely approximating the social meaning of a linguistic variable. For example, in the Northern cities Shift, the reason why [cheerful] and [affectionate] are the traits that show strong influence in the first stages of the sound change is because these traits were the traits that the participants used to define themselves locally from people from other northern cities on the East Coast during sociolinguistic interviews with the participants. A prediction that emerges from these results is that in male-led sound changes, the social meaning of the trait would be found by traditionally masculine traits having significant influence on vowel production. For example, the ay-centralization in Philadelphia, which has been found to be associated with “tough” individuals in the community (see Conn 2004, Wagner 2005), may see masculine traits such as [aggressive], [assertive], or [dominant] as the strongest influence on vowel production. Although individual traits may not be an exact match with the social meaning of the variable, perhaps multiple traits together would more closely approximate the meaning or Bem’s original study in trait selection can be used as a guideline in assessing traits that may be important to the community and assessing how these traits may behave different across communities that differ in ethnicity, social class, or other social variables.

The interaction of the traits in a regression model revealed the intersection of traits that very closely resemble the profiles of leaders of linguistic change that Labov identified. Through the last several decades of research in social psychology, researchers have shown that various traits cluster together across various study. The clustering of personality traits gives way to personality types, where individuals with similar personality types behave in similar ways. The use of a personality trait assessment, thus, can be used as a way of predicting which individuals may be the linguistic leaders in the community and give a new way for use to identify individuals who are leading their peers in advanced productions of innovative linguistic variants regardless of gender. I believe that by replicating this study in other communities, we may see the same clustering of traits that come to be identified with leaders across communities and would have a way of predicting leaders in advance of examining language production data. This also would give a way of isolating traits that may be unique to leaders from traits that may exhibit the social meaning of the linguistic variables in question. From this current study, I believe [dominant] to be one of the most important trait for predicting innovative individuals because this trait regularly surfaces as influential in the multiple regression model that examines the influence of multiple traits, while self-identification with [feminine] (for women) and [masculine] (for men) may predict linguistically conservative individuals.

The importance of linguistic variables has also been demonstrated in this chapter. Although social variables were important for the first stages of the NCS, this chapter has shown that the examination of vowels as a system is also important in understanding factors that influence production of vowels in later stages of the chain

shift. For the second and third stages of the shift, how much an individual had varied their production in the first stage of the NCS was a stronger factor in predicting vowel production than any of the traits that were listed. This result shows that even though individuals may not participate systematically in the Northern Cities Shift (i.e., some may only have evidence of two early stages, but others may have a first and much later stage), the community seems to be participating in the shift.

Lastly, this chapter has shown that although we have sound changes that may be either led by women or men overall as a social group, the creation of gender indexes of masculinity and femininity oversimplifies the role that gender plays in sound change. Although there are some important feminine traits, not all feminine traits influence vowel production and both men and women identify with all traits (masculine and feminine) at differing levels. Rather than trying to examine a dynamic social identity of gender directly by creating indexes, the results presented here suggest that an examination of the correlates of gender can be more important to explain the role that gender plays in a sound change, and the results show that a more subtle look at these gender-related traits can be used to explain gender-differentiated patterns of language use.

CHAPTER 4: RESULTS OF WOMEN VERSUS MEN

Since the Northern Cities Shift has been described as being a female-led sound change, it is possible that women behave differently from men in respect to traits that influence more innovative vowel use. This chapter will focus on difference among sex-based groups' use of / æ /. The reason that / æ / will be given focus in this chapter is because it is the stage that had the most variation among speakers and gave the most robust findings in Chapter 3. For this chapter, the use of gender indexes within sex groups will be explored once again. Additionally, individual traits will be correlated for women and men with both F1 and F2 values of / æ / and trait interactions will be explored.

4.1 Results of Gender Indexes

Among women, neither the M-Index nor the F-index scores did not significantly correlate with either the average F1 or F2 values of / æ /. Additionally, including both of these scores together in a regression analysis did not yield a statistically significant result. Interestingly, along the F1 dimension (a dimension where men tend to lead sound changes as discussed in Chapter 3), there was a near significant ($p=0.06$) negative correlation of the average F1 of / æ / with the M-index among the *women*, but not the men. Had this result been significant, it would mean that the more masculine that the women identified as along this dimension, the more innovative forms of the Northern

Cities Shift would be used, which would be consistent with a split between innovative versus conservative women. Overall, that neither index yielded significant results is consistent with the results of Chapter 3, and this again suggests that indexes that tend to assess gender oversimplify the role of a dynamic social variable in ongoing linguistic change.

4.2 F1 results for / æ / among Women versus Men

In Chapter 3, among all speakers, [cheerful], [self-reliant], [dominant], and [reliable] were the only traits to show significant correlations between self-identification and vowel production for the F1 values of / æ /. [Cheerful] by far had the strongest correlation with a p-value equal to 0.0065. This section will examine sex-based groups to determine any similarities and differences for the F1 of the vowel.

4.2.1 F1 results for / æ / among Women

When we isolate women and look at how traits influence F1 production of / æ /, there is an interesting interaction. The only traits that show statistically significant correlation with F1 values are [cheerful] (p=0.0150) and [dominant] (p=0.0134). For both of these traits, there is a negative correlation meaning that the higher one self-identifies as either [cheerful] or [dominant], the lower their F1 value of / æ / will be. This means that high identification as [cheerful] and [dominant] lead to innovative vowel use. There is a near-significant positive correlation with [feminine] (p=0.0547). These results are consistent

with the results presented in Chapter 3 and further support the conclusions of the social meaning of cheerful and the qualities exhibited by leaders in this speech community.

A regression table that includes all of the factors selects a similar portrait of a leader: a cheerful, dominant, self-reliant individual who may not be known for being tactful. Table 4.1 illustrates this regression model.

Table 4.1 F1 of / æ / Regression Model Among Women

R ² = 0.793		
Variable	T	P (2 Tail)
Self Reliant	-2.7679	0.0160
Cheerful	-2.2822	0.0400
Dominant	-2.2745	0.0405
Tactful	4.3610	0.0008
Analysis of Variance: F-Ratio=12.4838, p=0.0002		

Again, this result is again consistent with Labov's portrait of a linguistic leader—someone who is quick to speak her mind to right social injustice as Labov found with Celeste in Philadelphia.

4.2.2 F1 results for / æ / among Men

Among men, there was only one trait that significantly correlated with the average F1 of / æ /-- [feminine] ($p=0.0156$). As with the women, the more [feminine] the males identified as, the more likely they were to use conservative (lower) productions of the vowel.

For the regression table that examines interactions of traits, the findings only among men are also less robust, with a smaller percentage of variance accounted for by the terms and a higher p-value. These results are shown in Table 4.2.

Table 4.2 F1 of / æ / Regression Model Among Men

R ² = 0.451		
Variable	T	P (2 Tail)
Cheerful	-0.3414	0.0739
Feminine	2.2573	0.0476
Dominant	-0.1943	0.0498
Masculine	1.1717	0.2685
Analysis of Variance: F-Ratio=2.0550, p0.0162		

Table 4.2 shows that leaders among men are [dominant] and [cheerful], but not particularly identifying as [masculine] or [feminine].

4.2.3 Discussion of F1 of / æ / among Men and women

For the F1 of / æ /, overall very similar results were found while examining women and men separately compared to examining them together. For both groups, the trait that had the strongest correlation with F1 production was [cheerful], which is consistent with the results of Chapter 3 as well as the results of the pilot study.

The greatest difference between men and women is that the results were much stronger for women compared to men. The R^2 value of the regression model of traits selected for women was 0.793, which means that nearly 80% of the variation in vowel production among women can be accounted for by the regression model. The regression model for men, however, only accounts for around 45% of the variation in vowel production. These results suggest that while women and men are both using the linguistic variable in the same way, women are leading men with its use, consistent with the finding that the NCS is a female-led sound change. For men alone, both [feminine] and [masculine] were traits that were selected in the regression model. These results reiterate previous findings that there is gender-related difference in the NCS and that while gendered personality traits can explain some gender-based patterns of language use, gender has an influence beyond personality that needs to be studied as an independent variable.

4.3 F2 results for / æ / among Women versus Men

The traits that significantly correlated with F2 values of / æ / when women and men were both examined together were [cheerful], [affectionate], [dominant] and [moody].

This section will examine how personality influences F2 production of / æ / among women and men separately from one another.

4.3.1 F2 results for / æ / among Women

Among women, there is only one trait that shows a significant correlation with the F2 of / æ /- [cheerful] ($p=0.0224$). This trait shows a positive correlation, which indicates that the more [cheerful] an individual is, the more likely they are to use an innovative (more forward) production of the vowel. The only term that had a near-significant correlation was a negative correlation with [masculine] ($p=0.0609$). The regression model for the F2 among women is interesting because it shows no interaction among traits. The only trait that was chosen in a full model was also cheerful, with an r^2 value of 27.9%, which covers a considerable amount of variable for only a single trait.

4.3.2 F2 results for / æ / among Men

Unlike the women, there were several traits that were found to significantly correlate with the F2 of / æ / among men. These results are summarized in Table 4.3.

Table 4.3 Individual Traits influencing F2 production of / æ / among men.⁶

Trait	P	R ²
Affectionate	0.0033	49.7%
-Feminine	0.0070	44.0%
Self-reliant	0.0086	42.4%
Dominant	0.0171	36.5%
Masculine	0.0228	33.9%
Understanding	0.0326	30.5%

Among men, three feminine traits and three masculine traits significantly correlate with F2 values of / æ /. Table 4.3 shows that individually, the traits account from 30-50% of the variation in vowel formant values among the men. The only trait to show a negative correlation is self-identification as [feminine], which is consistent with previous results. The trait that shows the strongest correlation even among only men—[affectionate]—is still a trait that is traditionally more desirable for women to possess than men. [Affectionate] and [dominant] are consistent with the previous results of F2 of / æ / among all speakers, while the other traits were found to be significant for the F1 of / æ / among all speakers.

⁶ A (-) before a trait indicates a negative correlation, which means that higher one self-identifies with the trait, the more conservative production is used.

4.3.3 Discussion of F2 of / æ / among Men and women

While the women and men in this study may behave fairly similarly with respect to the F1 of / æ /, the gender difference becomes very apparent with the F2 of / æ /. For F2, men that identify as [affectionate] and [understanding] (traditionally more desirable for women) coupled with the masculine traits [self-reliant] and [dominant] are those who lead in vowel production among other men. The fact that there is so much variation among men where so little is found among women is an important finding.

Eckert (2004) notes that “[t]he primary importance of gender lies not in the differences between males and females across the board, but the differences within gender groups.” We can examine the differences within the group of males with an examination of individuals. The three men that have the highest non-nasal average F2 of / æ / are Brendan (2028 Hz), Pete (2023 Hz), and Mike (1993 Hz). Brendan is an undecided major at Michigan State. He has a large group of friends with whom he does typical college student activities with, such as going out to clubs and tailgating, but he also considers himself a “huge nerd.” He spends most of his time at home playing chess and video games. Similarly, Pete studies finance and has a passion for ping-pong. He loves to compete in ping-pong tournaments, despite others making fun of him. Mike studies advertising, but he had just switched his major from English. When Mike talked about his best college experiences, this was what he said:

“My most memorable college experience... I would have to say probably during my sophomore year.. We, um, I was taking 18 credits and I should have been listed as clinically insane and I four-pointed the semester. That was probably my best college experience because I really worked hard that semester and it paid off. It was just a great experience to know that I took 18 credits and was able to pull off a four in every class.”

While all other participants in the study discussed a big party or their first football game or another social activity, Mike was the only participant to talk about an academic accomplishment. Brendan, Pete, and Mike all rate themselves as competitive and masculine, but also self-identify highly as affectionate and understanding and reject other traditionally masculine traits. These men are using advanced NCS vowel production as a way of distinguishing themselves not from women, but rather from other types men.

Support for this analysis among men comes from an examination of another male in the study – Dave. Figure 4.1 shows a plot of Dave's vowels.

Figure 4.1 – Plot of Dave's Vowels

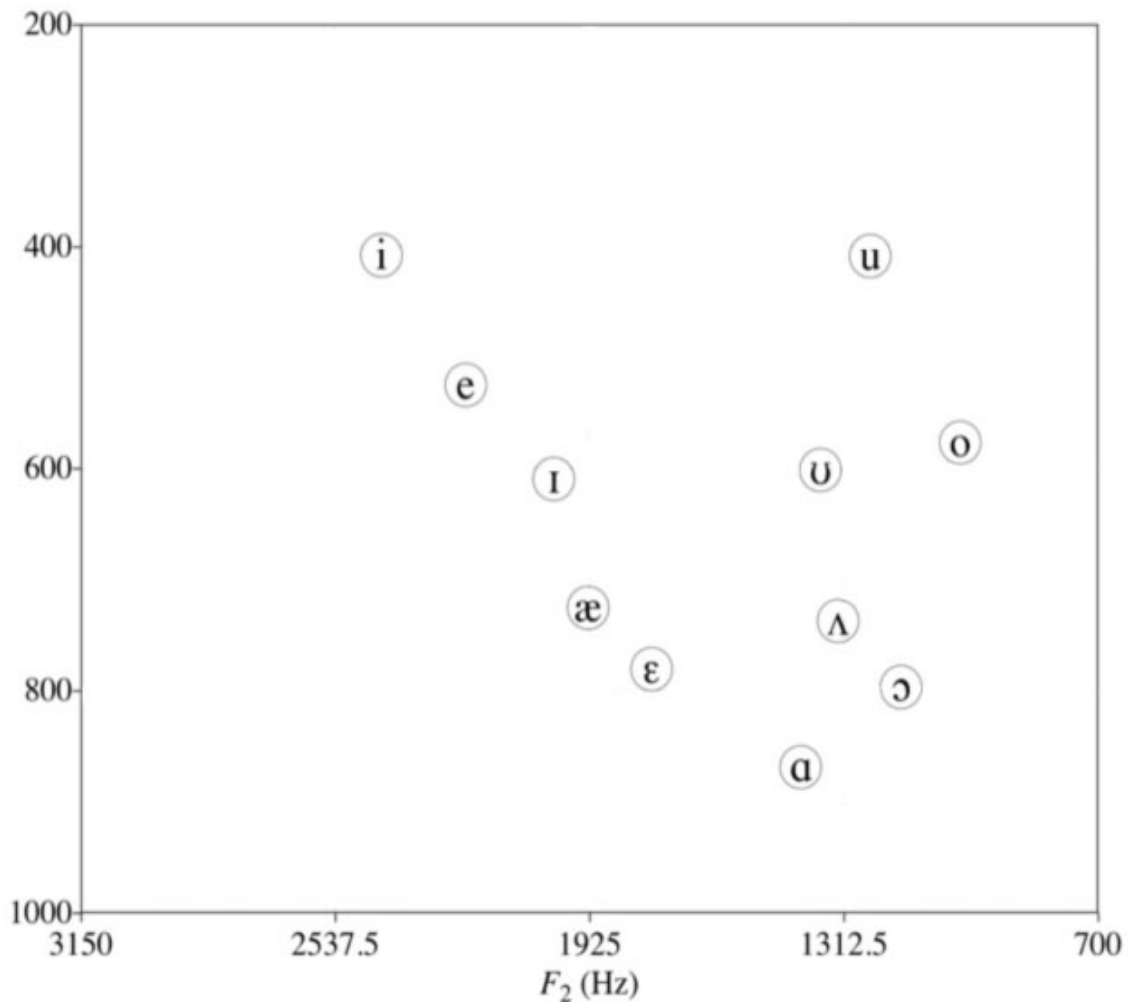
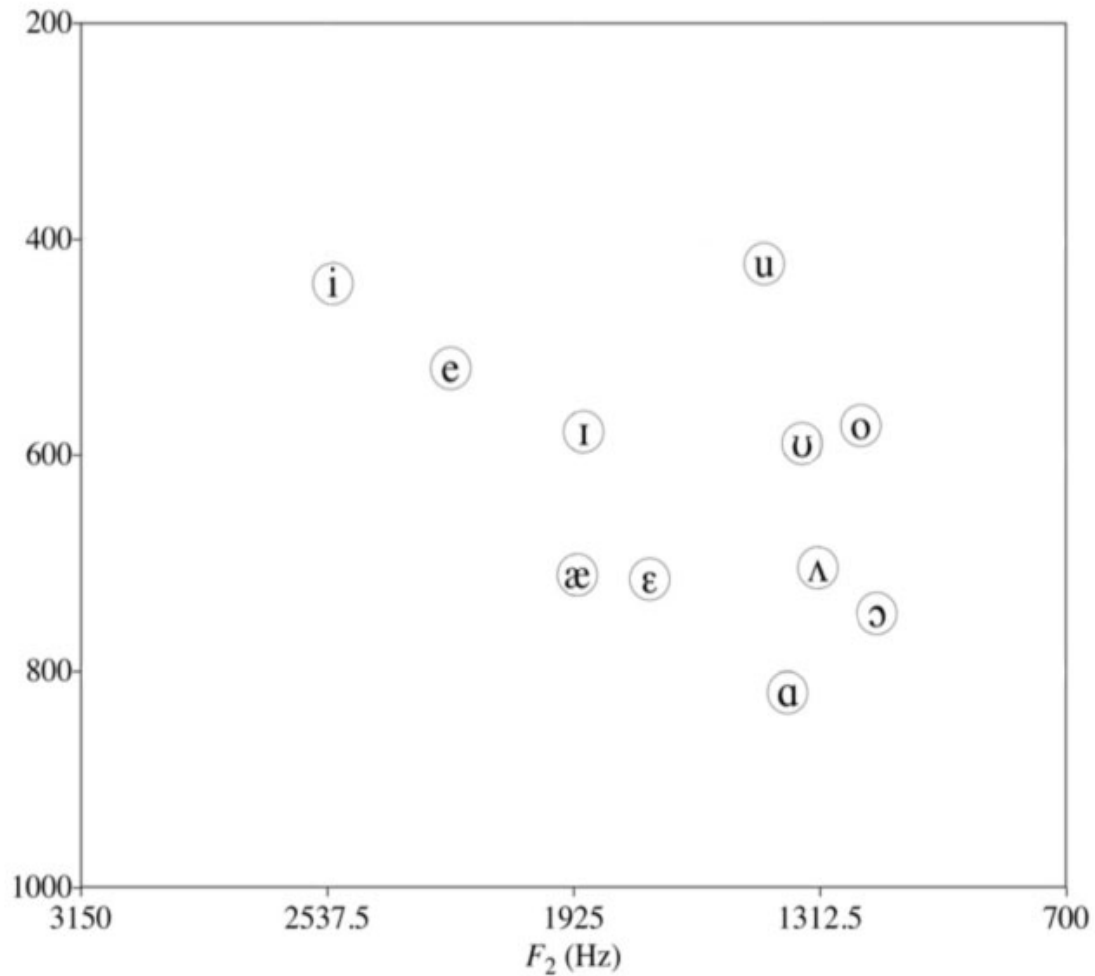


Figure 4.1 shows that Dave has a fairly advanced NCS vowel system. His /æ/ and /ɛ/ have reversed in position, his /ʌ/ is more retracted than a lowered and fronted /ɑ/, his /ɔ/ has lowered and fronted in position, and his /ɪ/ is lowered as well. From these measurements, we would actually expect Dave to have a more fronted and raised /æ/

considering that he is more advanced than the average male for all other vowels, shown in Figure 4.2.

Figure 4.2 – Plot of Male Averages



In Figure 4.2, for the average male participant, / æ / and / ɛ / are roughly equal along the F1. For an advanced speaker, we would expect / æ / to move more forward and higher based on the results in Chapter 3 which indicate that earlier stages of the NCS predict

behavior in later stages. Although Dave has a lower and backed / ε /, his / æ / remains unchanged.

So what is going on with Dave and how does he support the analysis that men are using the F2 of / æ / to distinguish among different types of men? The answer comes from looking particularly at Dave's unique linguistic behavior in the production of / æ / in nasal versus non-nasal environments shown in Table 4.4.

Table 4.4 – Daves production of / æ /⁷

	Non-Nasal	Nasal
F1 Ave	662	492
F2 Ave	1639	1531

Previous studies have consistently shown that if a vowel precedes a nasal, such as in the word “man,” the / æ / should be more raised and fronted than / æ / in any other environment (see Labov 1994, Ito 1999, Evans 2001, Jones 2003, Roeder 2006). Although Dave raises / æ / in a nasal environment (indicated by the lower F1 value), he actually has a more retracted production of / æ / when we examine the F2 of the vowel, which is contrary to the fronting that is expected based on the conditioning linguistic environment. In fact, all other participants in the study raise / æ / in preceding nasal environments, but Dave is the only speaker who has a higher F2 average in non-nasal environments.

⁷ Based on eight non-nasal and four nasal tokens of the vowel.

Unlike Brendan, Mike, and Pete, Dave identifies very strongly as a “jock” rather than as a nerd. He plays on several intramural sports teams at the university and in high school he played both basketball and football. Sports are at the center of his life at college rather than academics. Although he highly self identifies with the masculine traits that Brendan, Mike, and Pete identify with (he actually has the second highest M-Index score with an average of 6.4 out of 7), he does not identify with the other characteristics that they share. This opposition in identity is manifested through his lack of participation in / æ / fronting, which was found to have significance only among the group of men.

If Dave or any speaker is participating variable in the NCS, a question that is raised is how salient does the NCS have to be for this to occur. This is an especially important question in the case of Dave, where his linguistic performance is opposite of what we would expect based on linguistic environment, which suggests some sort of intent in production. I believe that these results indicate that at least among some speakers, the Northern Cities Shift is becoming not only a conscious phenomenon, but also socially evaluated if some speakers are purposefully avoiding it. Through the sociolinguistic interviews, there is support that speakers are becoming aware of the NCS. When I asked one participant, Emily, to describe the way that she speaks, for example, she responded with detail and accuracy about her use of the Northern Cities Shift. Her reply was “I have a really strong “a”... like my ‘a’ [in] accent, ya know... So, I think that’s like the strongest part of how I speak.” Her response is particularly interesting because she specifically highlights her pronunciation of / æ /, the first

stage of the NCS that has been shown in this dissertation to have the most variables that correlate with its use.

4.4 Chapter 4 Summary

This chapter has examined the production of / æ / among women and men. The results of this study lend support to Eckert's (2001) assertion that it is important to examine men separately from women in order to explore the role of gender in ongoing linguistic change. Although men and women behave similarly with their use of / æ /-raising in the Northern Cities Shift—in both groups cheerful individuals are most likely to raise their vowel—there is significant difference between the groups in / æ /-fronting. Among men, there are several traits that influence the F2 of / æ /, while there are no statistically significant traits that influence F2 production among women. This result is significant since fronting has been shown to precede raising, and males are the ones with significant result in a female-led sound change.

The results of this chapter also suggest that the Northern Cities Shift is becoming a sound change that individuals show differing levels of awareness of the first two stages of the sound change, though there is no evidence that speakers have viewed these as an interconnected phenomenon. During sociolinguistic interviews, one individual not only commented on her own perceived accent, but showed a great level of detail with the identification of vowels that belong to the / æ / word category. Another speaker commented on her own experiences with the production of / ɑ /. Additionally, the resistance to / æ /-fronting displayed by Dave in linguistic environments that favor

more advanced NCS production indicate that there may be a level of social evaluation that is occurring with the use of the first stage of the shift.

CHAPTER 5: CONCLUSION

5.1 Personality and Language

Personality is an organized set of characteristics that is possessed by a person. These characteristics can influence an individual's thoughts, feelings, motivations, and behaviors across various social situations. Personality influences our expectations, our perception of self and others, our attitudes, and it predicts our reactions to others and varying situations. Personality is both who we are and how we are. Over the past several decades of sociolinguistic research, we have shown that whenever we speak, we reveal an array of social characteristics and usually without any conscious effort. As shown within this dissertation, we also reveal aspects of personality.

For the majority of modern sociolinguistic study, the social characteristics of social class, gender, ethnicity, and age have been central variables of study within the field. More recently, other social variables, such as sexual orientation have been explored. While an individual may be able to change some of these social characteristics, common to all of them is that their importance to individuals has been shown to vary across social situation. For example, Rickford and McNair-Knox (1994) found that Foxy Boston's use of African American Vernacular English features changed depending on whether the interviewer was European American or African American and also based on topic of conversation, which gave support to the Audience Design model of style shifting. In some situations Foxy Boston's ethnicity seemed to influence language use and in some it may not have. In this way, ethnicity, as well as other social characteristics, are dynamic. As we grow we construct and re-construct our social

identities based on how we come to understand the world around us. The social construction of gender, ethnicity, and other social identities are never-ending. They are continually created through human actions and interactions. Personality, on the other hand, is the opposite--it stabilizes, endures, and cuts across social situations. The fact that personality is stable is central to clinical psychology and changes in personality are considered a warning sign of considerable problems in an individual. This static nature of personality is succinctly summarized by Eugene Gendlin (2012):

“Personality theories have chiefly been concerned with the factors that determine and explain different individuals’ personalities as they are, and the factors which have brought about the given personality. What is called personality maintains its character despite circumstances. Aspects of an individual fail to puzzle us if his current situation explains them. We do not even attribute it to his personality when an individual shows all sorts of undesirable behavior under overwhelmingly bad circumstances, or when he becomes likable and secure under the influence of events which (as we say) would make almost anybody likable and secure. What we do attribute to personality is the reverse: when an individual remains likable and secure under overwhelmingly bad circumstances, and when an individual remains afraid and in pain despite apparent opportunities and good luck... [O]ur theories have been endeavoring to explain and define personality as that which tends not to change when one would expect change.”

The stability of personality makes it an ideal variable of study to understand the role of individuals in a community. While we can learn a great deal about individuals and community by studying dynamic social variables, these models give little to predictability since any linguistic behavior is predicated on specific situations of use. Personality enables us to make predictions about language use and language change across a community if we are able to find which traits are given social meaning and which traits are shared amongst leaders in a community.

As discussed in Chapter 1, Bem's Sex Role Inventory is a collection of personality traits that can be used as a tool to understand the role of personality in ongoing linguistic change. One advantage of the BSRI is that participants in studies that use the BSRI show extremely high degrees of retest reliability over extended periods of time, which also supports the idea that personality is stable. Moreover, the BSRI is a great tool for social analysis because it connects personality to gender—some traits are more desirable for women, some for men, and some traits are gender neutral. The connection of personality to gender can help us understand gender-differentiated patterns of language use as well as how and why individuals pattern in ways contrary to gender expectations, such as accounting for why some individual men may lead in female-led sound changes, or why some females use features of male-led sound changes at higher rates than others.

5.2 Dissertation Summary

Overall, this dissertation has found that single personality trait that has the strongest correlation with more advanced productions of vowels in the Northern Cities Shift is cheerfulness. Regardless of gender, individuals who strongly self-identify as [cheerful] are those that are most likely to use more shifted variants of the Northern Cities Shift, particularly with the fronting and raising of /æ/. Several other feminine traits as well as a couple masculine traits were also significant for individual vowels, regardless of a speaker's sex. This trait not only highlights a positive aspect of the Metro Detroit area for the participants, but it also is a trait that has been found to be possessed by individuals who lead language changes in other areas as well. Both Labov (1973) and

Eckert (1991) have pointed out that several vocalic variables seem to function as manifestations of a broader closed-mouthed versus open-mouthed articulatory style. As Eckert discusses

The burnouts' lead in the backing of both (e) and (uh) could be taken as indication of a similar phenomenon whereby the two categories are differentiated by a preference for a fronted or backed setting. Such a differentiation could be seen as iconic in some sense, insofar as it corresponds to a striking difference in jock and burnout demeanor. The jocks' open-faced smiling demeanor contrasts overwhelmingly with the burnouts' more somber demeanor, which in turn corresponds to a more general open versus closed body posture, and even the choice of light versus dark colors in clothing and makeup.

Although the participants in this current study are possibly beyond these highschool jock/burnout/in-between categories, the idea that tendencies such as having an open-mouthed smiling demeanor would affect vocalic articulatory style is nevertheless supported by this dissertation. Gordon and Heath (1998) discuss extensive experimental and clinical data that connect mental state and linguistic articulation:

The *facial efference theory*⁸ which derives from this is that facial gestures that involve lip movements (e.g., smiling)... can affect arterial blood temperature and therefore hedonic state [euphoria/dysphoria]... These models present, or could be elaborated into motivations for phonetic change that might complement or compete with our own.

The results presented in Chapter 3 support Gordon and Heath's conclusion that motivations for phonetic change can be found in the study of facial efference theory if we assume that those who highly self-identify with traits such as cheerfulness are more likely to produce facial gestures like smiling that are connected to psychological state.

⁸ Facial efference theory is connected to the idea that emotion metaphors like "cool" and "hot-headed" are motivated by facial gestures that cause physiological changes.

Chapter 3 also discussed the importance of not only looking at individual traits, but also looking at how traits interact. The results of Chapter 2 suggest that strong, recurring individual traits may be tied to the social meaning of the trait. For example, in Philadelphia it has been found that (ay)-raising and backing is associated with “toughness (Conn 2005, Wagner 2010). While “tough” is not a trait on the BSRI, we might expect individuals who highly self-identify as “aggressive” or “willing to take a stand,” which are both masculine traits, to use the innovated variants of this male-led sound change at a higher rate than those who do not self-identify with these traits. Additionally, since some of the BSRI traits are shown to be differentially gendered in communities that differ by ethnicity, we may find that traits related to “toughness” may be gender neutral in some communities than in others. For example, Wagner found that toughness is associated with Irish ethnicity in Philadelphia and Irish girls used /ay/ raising and backing to show their Irishness rather than showing that they were masculine, which would suggest that we may see “toughness” as gender-neutral in one community, but masculine in others.

By examining the intersection of traits, we can examine leaders of linguistic change—as used in this dissertation, we can identify individuals who use more advanced productions of NCS variants than others in their peer group..The multiple traits that were shared by individuals who were more advanced in their use of the Northern Cities shift – being affectionate, not highly feminine, dominant, having a strong personality – are the traits that were shared by those shown in the portraits of leaders of linguistic change discussed by Labov. The use of trait theory allows a quantitative way of predicting leaders of linguistic change. I predict that if we examine multiple sound

changes, we will begin to see a convergence of traits that may be shared by the leaders in each community, similar to how personality psychologists use cluster analyses to find personality types, and this will enable us to predict leaders of any linguistic change based on personality. I also believe that future research of personality in individuals may also enable us to predict who would be more likely to change their speech as adults and who will be least resistant to change.

While personality was shown to influence language production, the results presented in Chapter 3 also show the importance of examining linguistic variables as well as social variables. Gordon (2001) has discussed the problems of discussing different stages of a chain shift for linguistic changes such as the Northern Cities Shift. One large problem is that not all speakers in a community may acquire the stages of a sound change in the same order (if they acquire them at all). One person may show evidence of /æ/-raising and /ε/-backing, while another may only show /ɑ/-fronting and /ʌ/-backing. The results shown here, however, indicate that at the level of the community, the historical progression of the NCS is important. For the production of /ɔ/, for example, the strongest correlate of innovative production of the vowel is not a personality trait, but a linguistic variable—the production of /æ/. It is also significant that the production of the first vowel in the chain shift was more important than the production of the preceding stage with the vowel, which suggests that linguistically, the production of /æ/ is the most significant variable to examine. Additionally, we find that /æ/ is the most important variable to examine with the personality traits since it has the strongest results and the most variation.

Chapter 4 found support for Eckert's assertion that we must look within sex-based groups to see the true importance of gender in sociolinguistic analysis. The normalized F1 and F2 values for the groups found little difference between women and men, although women did tend to show slightly more innovative variants than men. While women and men seem to use "cheerfulness" to express the same meaning in the F1 of / æ /, there are significant differences between men and women with respect to the F2 of the vowel. For women, there were no significant traits that influenced F2 production, while there were several traits that were influential among men, which suggests that men may use the F2 value of / æ / to differentiate amongst themselves. The use of the linguistic variable in this way may suggest the beginnings of a social recognition and evaluation of variable pronunciation of the vowel. These results were supported by conscious awareness and discussion of the / æ / vowel in sociolinguistic interviews.

5.3 Concluding Remarks

This dissertation has attempted to provide a new methodology for studying how individuals pattern with respect to ongoing linguistic change. It is apparent that the use of trait theory in sociolinguistics can provide a unique perspective to explain and predict linguistic behavior. It has also shown how a more subtle examination of an individual's traits can be used to explain the role of sex and gender in ongoing change.

Several questions are raised by the study. First, if we examine leaders of linguistic change, will the same intersection of traits be found with other leaders of other changes, or is this clustering only significant to leaders of the Northern Cities Shift?

Perhaps this is only significant to individuals from the Metro Detroit Area who are in college. Another important question for future research is whether these traits be the same for all linguistic changes or only changes from below the level of social consciousness. I believe that while there may be common traits to all leaders of linguistic changes, there will likely be a difference in the type of person who leads changes from above compared to changes from below, but more research is needed on language and personality to see if this prediction holds true.

Another issue for future research concerns perception. This dissertation has found some evidence that the Northern Cities Shift is seeping into social consciousness and is becoming socially evaluated. If this is true, a perceptual study would be helpful to see if people perceive the use of this trait to be consistent with personality traits and also gender. Additionally, an examination of stylistic variation would enable us to see if there is a social evaluation of the use of the Northern Cities Shift.

The interaction of ethnicity and personality is another area for future study. Since different ethnic groups may evaluate some traits differently from others, the use of trait theory may also shed light on ethnic-based differences in language use.

These are only a few areas that demand further attention. The incorporation of trait theory into sociolinguistics is a potentially invaluable resource for understanding results that we found from the examination of traditional sociological variables. I hope that the methodology outlined in this dissertation will serve as a starting point for its use in future studies.

APPENDICES

APPENDIX A: BEM'S SEX ROLE INVENTORY

Table A: Traits

Masculine Traits	Feminine Traits	Neutral Traits
Self reliant	Yielding	Helpful
Defends own beliefs	Cheerful	Moody
Independent	Shy	Conscientious
Athletic	Affectionate	Theatrical
Assertive	Flatterable	Happy
Strong Personality	Loyal	Unpredictable
Forceful	Feminine	Reliable
Analytical	Sympathetic	Jealous
Acts as a leader	Sensitive to other's needs	Truthful
Willing to take risks	Understanding	Secretive
Makes decisions easily	Compassionate	Sincere
Self-sufficient	Eager to soothe hurt feelings	Conceited
Dominant	Soft Spoken	Likable
Masculine	Warm	Solemn
Willing to take a stand	Tender	Friendly
Aggressive	Gullible	Inefficient
Acts as a leader	Childlike	Adaptable
Individualistic	Does not use harsh language	Unsystematic
Competitive	Loves children	Tactful
Ambitious	Gentle	Conventional

APPENDIX B: SURVEY

Personal Attribute Traits Survey

Please record all answers on the op-scan form provided. Thank you very much for your participation!

Demographics Questions: Please answer the following questions about yourself.

1. Age:
 - a. 18-24
 - b. 25-29
 - c. 30-40
 - d. 40+
2. Ethnicity:
 - a. African-American/Black
 - b. Asian-American
 - c. European-American/White
 - d. Latino/Chicano/Hispanic
 - e. Other
3. Sex
 - a. male
 - b. female
4. Sexual Orientation
 - a. heterosexual/straight
 - b. homosexual/gay/lesbian
 - c. bisexual
 - d. asexual
 - e. other
5. Marital Status
 - a. Single/Unmarried
 - b. Divorced
 - c. Dating, not living together
 - d. Dating, living together
 - d. Married/Partnered
 - e. Widowed/Widower
6. Are you from:
 - a. Michigan

- b. another Mid-West state
- c. another state outside the Mid-West
- d. another country

7. Are you a native English speaker?

- a. yes
- b. no

8. Are your parents native English speakers?

- a. yes, both
- b. no, only my mother
- c. no, only my father
- d. no, neither are native English speakers

For Questions 9 through 68, please rate the extent to which each item describes you on a scale from (a) to (g). Choice (a) indicates the term *never* or *almost never* describes you, (g) indicates the term *always* or *almost always* describes you.

Example 9. Self-reliant

A selection of (a) means that you are never or almost never a self-reliant person.

A selection of (g) indicates that you are always or almost always self-reliant

- | | | |
|-------------------------|-----------------------------------|---------------------------------|
| 9. self-reliant | 29. reliable | 49. warm |
| 10. yielding | 30. analytical | 50. solemn |
| 11. helpful | 31. sympathetic | 51. willing to take a stand |
| 12. defends own beliefs | 32. jealous | 52. tender |
| 13. cheerful | 33. leadership ability | 53. friendly |
| 14. moody | 34. sensitive to other's needs | 54. aggressive |
| 15. independent | 35. truthful | 55. gullible |
| 16. shy | 36. willing to take risks | 56. inefficient |
| 17. conscientious | 37. understanding | 57. acts as a leader |
| 18. athletic | 38. secretive | 58. childlike |
| 19. affectionate | 39. makes decisions easily | 59. adaptable |
| 20. theatrical | 40. compassionate | 60. individualistic |
| 21. assertive | 41. sincere | 61. does not use harsh language |
| 22. flatterable | 42. self-sufficient | 62. unsystematic |
| 23. happy | 43. eager to soothe hurt feelings | 63. competitive |
| 24. strong personality | 44. conceited | 64. loves children |
| 25. loyal | 45. dominant | 65. tactful |
| 26. unpredictable | 46. soft-spoken | 66. ambitious |
| 27. forceful | 47. likable | 67. gentle |
| 28. feminine | 48. masculine | 68. conventional |

APPENDIX C: WORDLIST

Table B: Word List

1. but	26. tube	51. fan	76. odd	101. bet
2. fog	27. dawn	52. hock	77. shot	102. hat
3. hot	28. chip	52. seat	78. boat	103. men
4. face	29. duck	54. coy	79. mess	104. check
5. boy	30. send	55. cot	80. coffee	105. cut
6. soy	31. heat	56. mint	81. fund	106. body
7. take	32. soup	57. mice	82. hook	107. cub
8. juice	33. tuck	58. hawk	83. should	108. put
9. lift	34. sit	58. fix	84. hut	109. caught
10. toy	35. fast	60. hen	85. mitt	
11. moss	36. choke	61. oink	86. fed	
12. fat	37. heap	62. tan	87. spa	
13. ton	38. saw	63. sad	88. mad	
14. chalk	39. cat	64. bun	89. kit	
15. cab	40. taught	65. test	90. than	
16. hood	41. sight	66. beet	91. sauce	
17. took	42. sin	67. chop	92. dice	
18. dash	43. hub	68. fee	93. pot	
19. pin	44. stop	69. tie	94. cape	
20. hedge	45. dig	70. toad	95. desk	
21. soap	46. fought	71. go	96. Bob	
22. man	47. choose	72. could	97. tie	
23. buzz	48. him	73. shoe	98. boss	
24. Don	49. Save	74. hit	99. suds	
25. foot	50. said	75. Kate	100. pen	

*For Chapter 3, only non-nasalized tokens of / æ / from this word list are used.

APPENDIX D: READING PASSAGE

A Bad Day for Ducks

Tom and Bob were supposed to meet at Tom's house. They planned to go to a pond and watch the ducks that lived there. While waiting for Bob, Tom picked up around the house. The weather had turned cold. He put the electric fan in the garage and did the dishes.

He wanted to have a snack before he left, so he peeled an apple and cut it into slices. He bit into one, but it was awful, probably rotten. He spit it out and tried to rinse his mouth out with hot coffee. He poured it into a tin cup, but when he put it up to his lips, he spilled it on his hand. His hand puffed up and hurt a lot, so he stuck it under the faucet to make it feel better.

He grabbed a dusty hat out of the closet and shook it, but he couldn't get the dirt off. He got a cap instead and put a scarf around his neck and put on his socks and boots. He saw a big hole in his sock, but Bob was already late. His alarm buzzed, and it was past two-o'clock. Nothing was working out.

Just then Bob phoned and said he wanted to talk. He told Tom that the flock of ducks had left the muddy pond. A pack of dogs had chased them off. Tom was sad; he had really wanted to see the ducks slosh around in the water, but Bob said they could go shoot some pool instead. Tom thought that was a good idea and forgot all about the ducks and his burned hand.

APPENDIX E: SOCIOLINGUISTIC INTERVIEW QUESTIONS

Background/Family Questions

When were you born?
Where are you from originally?
Do/did you like it there?
What do/did you like best?
Are your parents from there too?
Do you have any siblings?
 female/male?
 Younger/older?

Work/School Questions

What do you do for a living?
What sort of training was required for that?
Have you always done that?

What is your major/year?
Have you always studied that?
Are you involved in any campus activities?
What about in high school?

What do you want to do after school?
Do you think you'll move back home?
What qualities do you think an ideal X has?
What is the typical student (stereotype) in your classes?
 Age?
 M/F?

Do you have a job outside of school?
 How are your coworkers?
 Do you hang out with people from work outside of work?

General/Friends Questions

Do you live on/off campus?
How do you like that?
Do you have any roommates?
 How long have you lived with a roommate?
 How long have you known each other?
 M/F?

Are most of your close friends from Michigan?
Where in Michigan are they from?
Where are other close friends from?

Have you ever heard of any stereotypes about people from Michigan?
What are they?
Who have you heard them from?

Are you friends with mostly men/women?
Has this always been the makeup of your circle of friends?

Language Questions

What type of English do you think you learned?
Does everyone in Michigan speak this way?
Where you're from, what other languages/dialects do people speak?
Who speak them?
Have you or your friends spoken any of them? When?
Has anyone ever made fun of the way that you speak?
What sorts of things?
Do you think you have an accent?

Gender Ideology Questions

Who do you admire/look up to who is a woman?
Why do you admire her?

Who do you admire/look up to who is a man?
Why do you admire him?

What sorts of stereotypes have you heard of males/females growing up?
Do you think there is truth to any of them?
Do you think you fit any of the stereotypes?
What about your friends?

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