

Language attitudes toward a grammatical construction: connective “which”

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Abstract

This study investigates American English speakers' language attitudes toward connective *which* constructions, specifically those with an apparent resumptive pronoun (see Looock 2007). In American English, sentence-level variation is typically negatively evaluated (Wolfram 2004), and as a form that utilizes apparent resumptive pronouns, which are ungrammatical in American English, connective *which* should be no exception. We performed a modified matched-guise task to evaluate the language attitudes of 36 native American English speakers toward naturally-occurring instances of this non-standard construction. We found that not only do listeners not have negative attitudes toward this construction, but they do not seem to notice connective *which* at all. These findings support the idea that *which* is being re-analyzed from a relative pronoun to a conjunction (Sells 1985, Kuha 1994, Looock 2007). This study helps us better understand language attitudes toward sentence-level variation in American English.

1. Introduction

In spontaneous English, people can produce *which* clauses that deviate from traditional schemas, which include a gap, as in (1), by having a resumptive pronoun where a gap would otherwise be, as in (2):

1. Then he wanted to meet the boy, which __ didn't happen, either.
2. Then he wanted to meet the boy, which **that** didn't happen, either (Denise Richards, 2019).

Typically, *which* constructions with resumptive pronouns are categorized as speech errors or as a way to "save" the acceptability of a complex *which* construction (Chomsky 1986, McDaniel and Cowart 1999, Ackerman et al 2018; cf. Asudeh 2011). However, the resumptive pronoun in (2) is not in such a position and there was no hesitation on the part of the speaker. Some researchers believe that *which* is undergoing a syntactic change, which was first noted over 30 years ago in American English (e.g. Sells 1985, Miller 1988, Daalder 1989, Kuha 1994, Looock 2007, Collins & Radford 2015, Burke 2017, Loss & Wicklund 2020). Many researchers categorize this change as *which* being re-analyzed from a relative pronoun to a conjunction (Sells 1985, Miller 1988, Daalder 1989, Kuha 1994, Looock 2007). Furthermore, Loss and Wicklund (2020) found that use of unembedded resumptive pronouns in subject position after *which*, as in (2), has increased in American English over the past 10 years rather than remaining steady, as an error would. Following the work of others (e.g., Looock 2010, Burke 2017), we call this construction connective *which* to differentiate it from standard relative pronoun *which*.

In this paper, we examine American English speakers' language attitudes associated with connective *which* constructions. Based on previous research into both *which* and other non-standard sentence-level constructions, we expect to find evidence of one of the following three language attitude situations: American English speakers may have a negative perception of

users of connective *which*. Non-standard constructions at sentence level are often negatively evaluated (e.g. Wolfram 2004: 72, Dailey-O’Cain 2000), and Loock himself (2010: 60) suggests that sentences with connective *which* will be particularly negatively evaluated. However, people may have positive attitudes toward connective *which*. This may be due to such uses being perceived as hypercorrection, which could have overt prestige (Kjellmer 1988). Most interestingly, listeners may not even notice such non-standard uses of *which*, as Kuha (1994) found over twenty-five years ago for a similar construction.

To examine language attitudes, we conducted a modified matched-guise study, in which participants listened to audio clips from talk media which had gap-filled *which* constructions as well as audio clips in which the resumptive pronouns were removed, creating standard *which* constructions (see Dailey-O’Cain 2000, Hasty 2015).

In this paper, we provide various evidence that this construction is more than a speech error and situate our study in the small body of work on language attitudes toward grammatical constructions. Next, we detail the methods of the study, with a focus on the creation of the edited stimuli. Following the methodology, we present the results of our research: People do not seem to even notice non-standard connective *which* constructions. In the final section, we discuss the relevance of these findings for understanding language attitudes towards grammatical constructions.

2. Background

In this section, we argue that connective *which* with resumptive pronouns is not simply an error, but variation that should be explored. Then, we explore why studying language attitudes toward sentence level variations is a unique and important area of sociolinguistics. Finally, we introduce possible outcomes, rooted in past research, for our research into language attitudes toward the connective *which* construction.

2.1 Connective *which* is not an error

Standard *which* clauses include a gap (Biber et al 1999):

1. If he terminates my client’s parental rights, he’s going to immediately have the foster parents adopt the child in the same proceeding, which ___ is unheard of in the law.
2. My nickname is ‘Pan’ which I don’t like ___ so much.

However, in spontaneous English, speakers sometimes produce a *which* clause with a resumptive pronoun where the gap would otherwise be, as illustrated below:

3. If he terminates my client’s parental rights, he’s going to immediately have the foster parents adopt the child in the same proceeding, which **that** is unheard of in the law. (Loss & Wicklund 2020: 29)
4. My nickname is ‘Pan’ which I don’t like **it** so much. (Loock 2007: 79)

While resumptive pronouns are grammatical in some languages, such as Hebrew and Irish, they are generally regarded as ungrammatical in English (McCloskey 2006, 2017). Despite their ungrammatical status, speakers continue to produce such constructions in spontaneous speech (Prince 1990, Cann et al. 2005). Below we join others (e.g. Sells 1985, Loock 2007, Burke 2017) in claiming that utterances like those in (3) and (4) are not a speech error, but rather a re-analysis of *which* from a relative pronoun, which is both anaphoric and connective, to something that is merely connective, such as a conjunction.

Constructions like those in (3) and (4) have a long history in American English. To our knowledge, Charles Carpenter Fries (1940) was the first to record such uses in American English. He found these uses in “vulgar” (uneducated) American English letters written to the US government. Here is one such sentence from his collection:

5. We have two boys go to school one 14 and 10 years old, which you see **they** need edycation.

Over forty years later, Sells (1985) was the first, to our knowledge, to posit that *which* is being re-analyzed as a conjunction in some dialects of American English. Since then, a number of researchers have noted such a re-analysis in various dialects of English, including Miller (1988), Daadler (1989), Kjellmer (1989), Kuha (1994), Loock (2007, 2010), and Burke (2017).

Some researchers point to the unexpectedly high frequency of such non-standard *which* constructions to support their claim of a re-analysis of *which*. For example, Loock (2007, 2010) notes that such uses of *which* occur too frequently in his and Kuha’s (1994) dataset to be errors. Such a claim is supported by evidence from the Corpus of Contemporary American English, where such instances of resumption in subject position increased significantly between 1990–1999 and 2008–2017 (Loss & Wicklund 2020). If gap-filled appositive relative clauses are indeed performance errors, such occurrences should be stable across decades. This finding is consistent with Prince’s (1990) finding that resumptive pronouns in English occur more in appositive clauses, that is *which* clauses, than restrictive clauses, that is *that* clauses.

Researchers who do corpus work, such as Loock (2007) and Burke (2017) have also noted that speakers not only produce resumptive pronouns, they also produce resumptive nominal phrases:

6. And we went ‘round the front the side and the back, which **the back** was like outside of the ... villa walls. (Burke 2017: 369)

This is surprising because cross-linguistic literature on resumptive constructions only note resumptive pronouns. There is little in the literature (outside of English) to suggest that resumptive nominal phrases occur. This leads us to think that perhaps these resumptive pronouns and nominal phrases are not truly resumptive at all, for if they were, we should only see

pronominal forms. Furthermore, we see these resumptive nominals occurring exactly where the literature predicts they should not occur: in unembedded structures.

Early work aimed at understanding why English speakers produce resumptive pronouns posited that such pronouns can “save” constructions that have a movement violation (a syntactic island) or ease processing when the would-be gap is heavily embedded (e.g. McDaniel & Cowart 1999, Alexopoulou & Keller 2007, Heestand et al. 2011, Asudeh 2012, Han et al. 2012, Keffala 2013, Polinsky et al. 2013, Beltrama & Xiang 2016, Loss & Wicklund 2020). Such explanations of saving constructions with island violations or easing processing fall short of explaining the constructions in this study, which are neither inside syntactic islands nor embedded, deeply or otherwise. If the resumptive pronoun is not motivated by these conditions, then perhaps we are looking at a change in how speakers use *which*. In fact, such a claim has been supported in a recent experimental study where participants rated sentences with resumptive pronouns in appositive clauses as more natural than those with restrictive clauses (Loss & Wicklund 2020). Notably, *which* clauses with resumptive pronouns were rated worse than *which* clauses with gaps, overall. Interestingly, Loss & Wicklund (2020: 47) note in their future research section that students who find *which* constructions with unembedded resumptive pronouns as unacceptable are surprised at how natural they sound when listening to audio. This suggests that resumption (if it is resumption) in *which* clauses may be more acceptable in speech than we thought. If this is not a speech error, but rather a change in progress, how is such a language change, which carries with it a form that looks so unacceptable on paper, evaluated by listeners? Is a change connected to some subset of speakers? Or is it a change that can happen anywhere by anyone, as Kuha (1994) and Burke (2017) suggest?

2.2 Language attitudes toward sentence-level variation

This is a unique opportunity to examine language attitudes, or certain ideas, beliefs, and thoughts, toward an apparently non-standard grammatical feature that likely indicates a change in progress (see Ryan et al. 1982). Studying language attitudes allows researchers to understand how certain features and speakers who use such features are perceived, as well as draw conclusions about when and why certain features and speakers are stigmatized.

Language attitudes can be studied using matched-guise tasks. The matched-guise technique, introduced by Lambert et al. (1960), consists of the same speaker creating two or more “guises,” originally different languages (Lambert et al. 1960) or dialects (Lambert et al. 1965). Participants then listen to each guise and rate the speaker for a number of qualities that allow researchers to analyze the language attitudes of participants. By having the same speaker produce both guises, researchers can control other voice attributes, such as pitch, speech rate, etc. Matched-guise tasks are typically used to study attitudes of phonological features rather than grammatical features of language. We explore some reasons for this imbalance below.

One reason for this imbalance is that sentence-level variation often encodes a semantic or pragmatic meaning difference that sound-level variation does not. Hasty (2014) calls this “Type 2” variation. Such variation may not be viewed as true variation as typically we think of

variation as two competing forms which express the same underlying meaning (“Type 1” variation; Hasty 2014). Because grammatical features often encode a semantic or pragmatic meaning and exist in unique linguistic environments (Hasty 2014), sociolinguistic studies, including matched-guise tasks, are difficult to properly perform, as meaning changes with form.

Another reason is that sentence-level variation is often more noticeable, and therefore more stigmatized, than phonological variation, likely because we are taught to eliminate sentence-level variation in school but are often allowed to maintain phonological variation. This may be due to grammatical variation often being tied to the speaker’s socioeconomic status in some manner, while phonological variations are often related to regional dialects, and thus are typically used by a variety of speakers from diverse socioeconomic backgrounds within the same geographical dialect area (Wolfram 2004). Despite these challenges, there are a handful of matched-guise studies that explore language attitudes of grammatical features.

Below, we explore three matched guise studies that explore language attitudes of sentence-level variation. Most of the variables examined below do hold pragmatic and/or semantic meaning, as suggested above by Hasty. Interestingly, the variation is met with a variety of attitudes, from being perceived as positive, to being perceived as negative, to being largely unnoticed.

Hasty (2015) explores the language attitudes toward double modals in Southern United States English (SUSE), specifically in Appalachian English, and found that double modals allow medical doctors to be perceived as having a more polite bedside manner. Hasty created two distinct guises using an audio recording from the Verilogue corpus, which is a corpus of healthcare provider-patient interactions, that originally contained a double modal construction. He chose one double modal use from a female doctor and one double modal use from a male doctor. With the original audio as the double modal guise, Hasty removed the second position modal to create the standard control guise. Forty SUSE speakers of Appalachian English from northeast Tennessee were asked to evaluate the “bedside manner” of the doctors’ guises in doctor-patient interactions using a 1-5 Likert scale for 19 sets of opposing adjectives. Listeners who heard the male doctor produce the double modal heard the female doctor produce the standard guise and vice versa.

Dailey-O’Cain (2000) explores language attitudes toward focuser *like*. Focuser *like* is generally used to highlight the construction that follows it. She found that overall listeners had negative attitudes toward focuser *like* guises; however, young women were perceived as friendlier when listeners rated the *like* guise. To create the audio stimuli, Dailey-O’Cain pulled two one-minute clips from four speakers’ monologues which were previously recorded from sociolinguistic interviews: a young man, a young woman, a middle-aged woman, and a middle-aged man. Each of the original recordings contained over a dozen instances of focuser *like*, and one monologue from each speaker was used as the focuser *like* guise. Dailey-O’Cain (2000) then digitally removed each instance of focuser *like* from the four remaining monologues to create a standard guise that features no *like* usage. For the modified matched-guise task, there were forty participants of two age groups, with all participants coming from upper-class,

highly-educated backgrounds. Participants were asked to evaluate the eight recorded monologues using a 1-5 Likert scale for 9 sets of opposing adjectives.

Silva-Corvalán (1984) examines language attitudes toward the verbal endings for subjunctive mood in Covarrubia, Spain, which is in Burgos. She looks at the standard subjunctive form, which she refers to as *-ra*, and the non-standard Burgos conditional form, which she refers to as *-ria*. These forms are, according to Silva-Corvalán, in free variation. She found that Covarrubians do not have negative attitudes toward the user of the non-standard *-ria* variant, even though they tend to associate the user of the standard variant with higher education and with a higher status occupation. Silva-Corvalán (1984) created the audio stimuli in a more traditional manner than the previous two studies we looked at. In her study, two college students from Madrid, a young man and a young woman, recited two sets of identical passages that only differed in regards to whether the standard *-ra* or the non-standard *-ria* verb forms were used. Eighteen participants of both genders, with the majority being over 30 years of age listened to a single audio clip of a speaker of the same gender. Half of the participants listened to the passage with the *-ra* verb form, and the other half listened to the passage with the *-ria* verb form. Participants then answered open-ended questions about the speaker's perceived occupation, geographic origin, and personality traits.

2.3 Possible results

In this study, we examine the language attitudes of American English speakers toward the non-standard connective *which* construction. Based on previous research into connective *which* and other non-standard grammatical features, we expect to find one of three possible results:

First, American English speakers may have negative attitudes toward users of connective *which*. As noted above, sentences with resumptive pronouns are rated as unacceptable or unnatural in American English. Resumptive pronouns have been found to be more natural in *which* relative clauses than *that* relative clauses, but all sentences with resumptive pronouns regardless of relative clause type were rated as less natural than sentences without resumptive pronouns (Loss & Wicklund 2020). In fact, Loock (2010: 60) claims that any experiment focused on connective *which* is “bound to fail” due to native speakers' reactions to such ill-formed constructions.

Second, American English speakers may have positive attitudes toward connective *which*. Kjellmer (1988: 161) suggests that clause-opening *which* may be a hypercorrection, which could, in turn, “be thought of as a mark of correctness generally.” If *which* is a marker of “correctness,” then it would carry overt prestige in the dialect.

Third, American English speakers may not even notice such non-standard uses of *which*. Over twenty-five years ago, Kuha (1994) conducted a matched-guise study on a different type of connective *which* construction in American English, called gapless *which*. Gapless *which* constructions do not have a gap in the *which* clause, as illustrated below (Kuha 1994: 1):

- (1) I'm gonna have someone there, just so books aren't stolen, which I think one was taken last year.

Kuha found that undergraduates from Ohio and Indiana did not rate the two guises (standard relative *which* clauses and gapless *which* clauses) differently for solidarity or status qualities, indicating that they did not notice the non-standard construction. The stimuli used in this study were created by recording a male speaker reciting four short passages: an informal passage with standard *which*, a formal passage with standard *which*, an informal passage with gapless *which*, and a formal passage with gapless *which*. Thirty-six participants listened to all four passages. After each passage, they were asked to respond to six statements, three addressing solidarity and three addressing status, by strongly agreeing (for a score of 3), somewhat agreeing (for a score of 1), somewhat disagreeing (for a score of -1), and strongly disagreeing (for a score of -3). An example of a solidary statement is: "He gets along with everybody." An example of a status statement is: "He is well educated" (4). Although Kuha found no difference in ratings between the standard and non-standard guises, she notes that once the gapless *which* construction is brought to people's attention outside of the task, "their overtly stated attitudes towards it are typically negative, even among speakers with linguistic training" (4). A big difference between Kuha's study and the study we present here is that our stimuli contain a resumptive pronoun inside the *which* clause which may be perceived as less acceptable than a gapless construction like the one above in (1). Let us turn to the present study and see what language attitudes toward gap-filled connective *which* we find twenty-five years later.

3. Methods:

Here we detail the methods used to begin understanding the language attitudes speakers of American English have toward the non-standard "connective *which*" construction. All procedures were approved by the Oklahoma State University internal review board before beginning.

3.1 Participants

A total of 36 native speakers of American English without a self-reported history of hearing loss or impairment participated in the study. Ten were men ages 22-45 (Median=27, SD=8.4), and 26 were women ages 19-73 (Median=34, SD=18). Participants were from a variety of states: California (1), Washington (2), Oregon (2), Alabama (2), Texas (3), Illinois (3), Oklahoma (10), and Minnesota (13). There were also a variety of educational backgrounds represented: some high school (1), high school diploma or equivalent (1), some higher education (12), an AA or undergraduate degree (14), some graduate or professional school (2), and a graduate or professional degree (6).

We were able to recruit from such a variety of geographic areas in the United States using the social media platform Reddit, as well as our personal contacts. As using Reddit is a fairly new method for recruitment (see Stanley 2019), we detail our recruitment methods here. First,

we contacted the moderator(s) for the subreddit of a number of targeted American states (Alabama, Minnesota, Pennsylvania, Washington) and asked if we could post the survey. We chose these states to represent a wide-spread selection geographic areas in the US. Also, we knew ahead of time that these states had allowed a short dialect production survey to be posted in the past, as Stanley (2019) used these subreddits for data collection. However, we were denied permission by three state subreddits (Arizona, New Mexico, Michigan) before receiving permission from alternative state subreddits. With permission, we posted the survey once daily, at 8 a.m., which is a time of high traffic on reddit, over the span of one week. We used the primary researcher's real name in the post with a dedicated username 'OSU-Ling'. See appendix A for the script we used to contact moderators and to post the survey.

Additionally, the survey was distributed through the faculty advisor's undergraduate courses. Students were offered extra credit for participation, with an alternative extra credit opportunity provided. The research team also utilized personal contacts to gather additional participants.

3.2 Materials

Using an existing database of American English talk and unscripted media gathered by the faculty advisor and her colleague, we pulled 8 sentences that featured a connective "which" construction with a filled gap in subject position; see sentences (1)-(8) below¹. Recall that this is the least-expected position for a resumptive pronoun in English. Four sentences were produced by men, two in an older age bracket of roughly 50 or older and two in a younger age bracket of under 50, and four sentences were produced by women using the same age groupings as for men. We also included one "high brow" and one "low brow" topic for each age and gender of speaker.

- (1) Certainly, those individuals who we find out were involved should be subject to the global Magnitzky act, which **that** has a limited amount of power, but it does say that we will freeze your assets. (Older man, high brow topic)
- (2) There was a line about Bigfoot's air of possessed melancholy, which, **that** says it all, you know? (Older man, low brow)
- (3) Josh says maybe it was advice from his dad, the Lutheran minister, or from his mother, who had always encouraged him to send personal thank you notes. Which **that** was actually something Josh did in this case. (Younger man, high brow)
- (4) But it's a, uh, it's a story for me as the father I play-- Single parent home, fathers that wanna be best friends with their kids, which **that** isn't usually the recipe for good parenting. (Younger man, low brow)
- (5) But now they want to take it a little bit further, DOT is looking at a proposal for rules that will define what is a ticket, which **that** sounds a little bit more like a French philosophy question. (Older woman, high brow)

¹ Sentences (1)-(7) come from National Public Radio and sentence (8) comes from a reality television show. The filler audio, sentences (17)-(32), comes from National Public Radio and Public Access or Government TV.

- (6) But they didn't really have any advice or guidance that they could give me in making decisions on how to take care of him, which - **that's** what the Facebook page is all about. Now we can help other women. (Older woman, low brow)
- (7) I just added to the agenda AB2020 and SB905 just in case Governor Brown had signed into law either of those bills in the last week, which **that** hasn't happened. (Younger woman, high brow)
- (8) And every time that we have been back and forth and back and forth, which **it** does happen all the time, I didn't think that I had to share that with her. (Younger woman, low brow)

We created standard relative pronoun utterances by editing out the (apparent) resumptive pronoun using Praat (Boersma & Weenink 2021; see also Dailey-O'Cain 2000 and Hasty 2015). The pronoun was isolated from the original audio by setting the boundaries to the nearest zero crossing at each end of the word and deleting the enclosed segment of audio. The audio was then reviewed for its naturalness and was adjusted if necessary. This produced the following audio stimuli with what appear to be standard *which* clauses:

- (9) Certainly, those individuals who we find out were involved should be subject to the global Magnitzky act, which ___ has a limited amount of power, but it does say that we will freeze your assets has a limited amount of power, but it does say that we will freeze your assets.
- (10) There was a line about Bigfoot's air of possessed melancholy, which, ___ says it all, you know?
- (11) Josh says maybe it was advice from his dad, the Lutheran minister, or from his mother, who had always encouraged him to send personal thank you notes. Which ___ was actually something Josh did in this case.
- (12) But it's a, uh, it's a story for me as the father I play-- Single parent home, fathers that wanna be best friends with their kids, which ___ isn't usually the recipe for good parenting.
- (13) But now they want to take it a little bit further, DOT is looking at a proposal for rules that will define what is a ticket, which ___ sounds a little bit more like a French philosophy question.
- (14) But they didn't really have any advice or guidance that they could give me in making decisions on how to take care of him, which ___'s what the Facebook page is all about. Now we can help other women.
- (15) I just added to the agenda AB2020 and SB905 just in case Governor Brown had signed into law either of those bills in the last week, which ___ hasn't happened.
- (16) And every time that we have been back and forth and back and forth, which ___ does happen all the time, I didn't think that I had to share that with her.

This is a total of 16 utterances for the matched-guise portion.

We also included 24 filler sentences. We chose eight sentences from the same database of spontaneous English that featured a coordinating conjunction of *and* or *but* between two independent clauses. We then created eight additional filler sentences by removing the subject of the second independent clause, again in Praat, from each utterance to create a sentence in which the coordinating conjunction joined verb phrases rather than independent clauses². We did this so that if people did notice any editing, they were not noticing editing with only *which* sentences. Below are examples of the eight original utterances with the removed content in bold:

- (17) And so we worked on the Civil Rights Act of '64 and **he** worked on the Voting Rights Act of '65.
- (18) And then they go for a walk along the lake **and they** duck into a cabin where a fire is blazing.
- (19) He is quite a character and **Joaquin** is deeply funny.
- (20) And I'd go downstairs and **I'd** go into the same kitchen. I'd turn on the light and I would binge.
- (21) I thought perhaps maybe I would be in Congress for 20 years and **I** thought that was a long time.
- (22) Actually the line producer of *Pretend it's a City* called and **he** said I got your test results, you're negative.
- (23) There was definitely moments where I was like I'm only going here to fill, like, a diversity quota and **I** don't really belong here and everybody else is so much smarter than me.
- (24) I went to a voice coach once and she recorded me and **she** gave me a couple tips.

The final eight filler sentences feature subordinating conjunctions, as shown below. We did not modify this set of fillers:

- (25) Well, I don't know if legally he can do it, but a lot of trade experts say it's probably not gonna happen because that would just cause all kinds of pain for all three countries.
- (26) Trump is not the first one to make the case that America needs to focus on solving problems at home before it goes and solves the problems of the rest of the world.
- (27) It's been a struggle in some ways because children take up a lot of your time and there's only 'X' hours in a day.
- (28) Get off of his morality and throw this out there, this shiny ball, so they can focus on that instead of all the other stuff that's going on, but this president likes to play on fear.
- (29) I think that if city's gonna enact legislation we oughta make sure that our bureaucracy has the wherewithal to enforce it.

² In number (2), the coordinating conjunction and pronoun, “and they”, were removed from the edited sentence due to difficulty creating a natural-sounding utterance when removing just the pronoun. No participants addressed this irregularity in the open-ended comment section.

- (30) To sit in some of the places that we have it in in this country today because they're not secure and the potential for an accident is certainly greater where these are today.
- (31) But don't worry, the aging curve slows way down as your dog grows up.
- (32) But that's also why she doesn't stop asking "Why?"-- Because of her faith.

Between stimuli and filler audio, participants listened to a total of 40 utterances.

3.3 Task

The survey was delivered remotely over Qualtrics. Participants first answered three screening questions to ensure that minors, those with self-reported hearing loss or impairment, and non-native speakers of American English were automatically directed to the end of the study. This was primarily for participants who found the survey via Reddit, as we did not want to waste anyone's time. Next, participants gave consent and were subsequently given directions. In the task itself, participants were presented with an embedded audio clip that played once automatically but could be played subsequent times (Sedarous & Namboodiripad 2020). The audio clips were randomized. Participants then rated each speaker on a 1-7 Likert scale for the following 5 qualities of solidarity and 5 qualities of status (Al-Hindawe 1996), as illustrated in Table 1:

Table 1: Semantic Differential Scales

Quality Type	General label	Negative end	Positive end
Status	Professionalism	Unprofessional	Professional
Status	Education	Uneducated	Educated
Status	Success	Unsuccessful	Successful
Status	Intelligence	Unintelligent	Intelligent
Status	Influence	Uninfluential	Influential
Solidarity	Friendliness	Unfriendly	Friendly
Solidarity	Humbleness	Pretentious	Humble
Solidarity	Communicator	Boring communicator	Engaging communicator
Solidarity	Honesty	Dishonest	Honest
Solidarity	Genuineness	Fake person	Genuine person

We chose to use fewer qualities than other matched-guise studies in order to have a greater number of fillers and have the survey take only half an hour. We felt that the fillers were important because, while not uncommon, *which* is a word that does not occur as frequently in corpora as other relative pronouns. The characteristics were presented in random order, so the negative and positive qualities were not solely listed from left to right.

At the end of the survey, we asked people the open-ended question, “Do you have any comments about the study or thoughts about what you listened to that you want us to know?” before also asking for their self-reported age, gender, home state, and highest level of education.

4. Results

At a glance, there are virtually no differences in how raters evaluated speakers when they produced standard or non-standard *which* constructions, as illustrated below in Table 2.

Table 2: Means and standard deviations of Likert scale ratings for all qualities:

	Standard	Non-standard
Friendliness	4.5 (1.5)	4.5 (1.5)
Genuineness	4.7 (1.5)	4.7 (1.5)
Honesty	4.7 (1.4)	4.8 (1.3)
Good Communicator	4 (1.5)	4.1 (1.5)
Humble	4 (1.5)	4 (1.5)
Education	4.7 (1.5)	4.8 (1.5)
Professionalism	4.4 (1.6)	4.4 (1.6)
Success	4.6 (1.4)	4.6 (1.4)
Intelligence	4.7 (1.4)	4.7 (1.5)
Influence	4.3 (1.4)	4.2 (1.4)

Interestingly, six of the 36 (about 17%) participants used the final open response question on the survey to comment on the number of repeated audio clips. Such comments support the lack of difference in ratings illustrated in Table 2. If people truly did not notice the resumptive pronoun in one of the clips, then the clips truly did sound like “repeats” and listeners should rate the two sentence types similarly.

Given the depth and consistencies of studies that report how unacceptable resumptive pronouns are in restrictive relative clauses, these results are surprising. How could a resumptive

pronoun, especially in such an unexpected position, go unnoticed? We went forward with a statistical analysis to (i) confirm what we were seeing and (ii) to see if there were any hidden patterns. Likert ratings were converted to z-scores prior to analysis to normalize the data. We used a linear mixed-effects regression, fitted using the analysis package lme4 (Bates et al. 2015) in the software package R (R Core Team 2013), to analyze the Likert scores for each quality individually. We ran a mixed-effects model with speaker gender, speaker age, and participant education as fixed effects and participant and item as random effects.³

We used speaker age, speaker gender and participant education as fixed effects for specific reasons. We know that women and younger speakers are sometimes rated more negatively than men and older speakers when they engage in language change (Dailey-O’Cain 2000). We also know that Kjellmer suggests that connective *which* constructions are a hypercorrection, and so we wondered if participants with different educational levels would rate stimuli differently. Since we only had a few participants with a high school or less, we created two categories: no higher education (only a high school diploma) or at least an associates degree.

Perhaps unsurprisingly, we found nothing: *p*-values confirm that there was no difference in how the clauses were rated, and there were no interactions with *which* type and any of the independent variables.⁴ You can see the full stats output for the main effect of *which* type as well as interactions with speaker gender, speaker age, and participant education in Appendix B.

5. Discussion

In our study, people did not have negative or positive perceptions toward connective *which* users, but in fact seem to not notice this non-standard grammatical construction. It may be surprising that listeners do not have negative perceptions of such a non-standard construction, as we know that relative clauses with resumptive pronouns are consistently rated as unacceptable (e.g. McDaniel & Cowart 1999, Alexopoulou & Keller 2007, Heestand et al. 2011, Polinsky et al. 2013, Beltrama & Xiang 2016). Below, we offer some explanations for this finding.

One explanation for connective *which* going unnoticed is that it is indeed being re-analyzed from a relative pronoun to a conjunction (Sells 1985, Miller 1988; Kuha 1994; Looock 2007, 2010; Burke 2017). In fact, we note that we can replace connective *which* with subordinating and coordinating conjunctions to create standard constructions:

- (33) I just added to the agenda AB2020 and SB905 just in case Governor Brown had signed into law either of those bills in the last week, **which** that hasn't happened.

³ The only category with any outliers was “success,” and these were removed before the data were analyzed. The formula we used is: `RegressionModel <- lmer(scale[Quality] ~ `Which Type` * `Speaker Gender` * `Speaker Age` * `Participant Education` + (1|Participant) + (1|Item))`

⁴ The R code we used ran all interactions and did find significant *p*-values for other interactions, regardless of *which* type, in some of the runs. We found that participants rated younger men as the most friendly and genuine, and younger women as the least friendly and genuine ($p = 0.02$ for both qualities). Younger speakers in general were rated as better communicators than older speakers ($p = 0.03$). Participants without a bachelor’s degree rated women as most successful, but participants with a bachelor’s degree or higher rated women as least successful ($p = 0.05$).

- (34) I just added to the agenda AB2020 and SB905 just in case Governor Brown had signed into law either of those bills in the last week, **although** that hasn't happened.
- (35) I just added to the agenda AB2020 and SB905 just in case Governor Brown had signed into law either of those bills in the last week, **but** that hasn't happened.

Furthermore, this re-analysis may be further along than previously suspected (see Looock 2010). However, because connective *which* is a grammatical feature, it is especially interesting that this construction and the change it is undergoing are generally not noticed, as sentence-level variation is usually singled out for correction in schools.

Another explanation for why people may not notice connective *which* is because it “is certainly not a stereotypical marker of any particular speech variety” (Kuha 1994: 3). Because this construction does not seem to be tied to a group, or groups, with less social power, it may be better able to go unnoticed. The fact that we were able to find examples of the construction being used by a variety of speakers in talk media, such as National Public Radio, supports Kuha’s claim that connective *which* is not indicative of an informal register. Additionally, Kuha found gapless *which* constructions in student papers, but this construction is not something one of the authors, who works in a university writing center, has heard writing consultants mention as an issue with clients’ writing. Though anecdotal, these accounts support the claim that connective *which* is not of any one register.

Finally, this result may be helped by the fact that we used naturally occurring stimuli for the connective *which* tokens. Looock (2007: 84) observed that in constructions with resumptive pronouns, there is sometimes an unexpected pause after the pronoun occurs. Furthermore, Loss and Wicklund (2021) found that compared to standard *which* clauses, connective *which* has a unique pause and intonation pattern; Connective *which* constructions that feature a resumptive pronoun often have a pause both before and after the pronoun occurs, making the construction its own intonation unit, while standard *which* typically only has a pause before and typically begins an intonation unit. This could mean that naturally occurring instances of connective *which* better follow the unique pattern of the resumptive pronoun construction and sound less obviously non-standard to listeners, while instances of connective *which* stimuli that are scripted or adapted from literature and recorded, such as in Burke (2017), may or may not follow the exact pattern found in natural speech.

The results of our study suggest that American English speakers do not have positive or negative language attitudes toward connective *which*, but in fact seem to not notice it. This study mirrors previous findings from Kuha (1994) that connective *which* generally goes unnoticed by listeners, as well as the claim that connective *which* is undergoing a re-analysis in American English.

6. Conclusion and Future Research

In American English, sentence-level variation is typically negatively evaluated. Our study used a modified matched-guise task to determine American English speakers’ language attitudes

toward non-standard connective *which* constructions. Based on previous research into sentence-level variation, we predicted that participants could have either positive attitudes, negative attitudes, or even take no notice of the construction. Because this form of connective *which* has apparent resumptive pronouns, which are ungrammatical in English, the most likely scenario was that participants would have negative language attitudes toward the construction. However, the results of our study reveal the most unlikely conclusion: People generally do not notice this non-standard grammatical construction at all. This finding has several possible explanations, most prominently that connective *which* is not actually an error, but *which* is undergoing a re-analysis from a relative pronoun to a conjunction in American English. This result may also be due to connective *which* being not tied to a particular group or register with less social power. Additionally, the use of natural occurrences of connective *which* for the matched-guise stimuli may have better captured the unique intonation of the construction, possibly leading listeners to take less notice of the irregularity of connective *which*. Regardless, the results of our study provide unique insight into language attitudes toward a seemingly non-standard grammatical construction in American English.

Future research into connective *which* should examine other surface forms aside from the gap-filled connective *which* discussed in this study, as Kuha (1994) did for gapless connective *which* constructions. Additionally, an acceptability task with naturally occurring instances of connective *which* would provide more insight into language attitudes of American English speakers toward the construction, as Burke (2017) has done for Australian English.

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Appendix A: Reddit Scripts

Reddit Moderator Permission:

“Hello, my name is Colby Sutherland and I am a senior at Oklahoma State University conducting a survey for my senior thesis. I am reaching out to you all as the moderators of the Alabama subreddit to ask if I can advertise my dialect perception survey on this page. We are particularly

interested in the views of people from Alabama. This study takes about 30 minutes, and consists of participants listening to a series of audio clips and rating the speaker on a number of qualities. There are no risks or personal benefits to taking this study, and no participants will be compensated. I would greatly appreciate your permission to ask for volunteers on this page, and am more than happy to answer any additional questions you may have! Thank you for your time and consideration.”

Reddit Participant Recruitment:

“Hi! My name is Colby Sutherland and I am a senior at Oklahoma State University. I am conducting a 30-minute dialect perception survey for my senior thesis and am asking for volunteers who are 18 or older, native American English speakers, and have no history of hearing or speech impairments. Participants will listen to a series of audio recordings and rate the speaker on a number of qualities. There are no risks for participants, and none of the information you provide can be used to identify you. This study also has no personal benefits, and participants will not be compensated, but this research will contribute to our knowledge about language differences. We are particularly interested in the views of people from [state], so if you are interested in taking part in a short and fun linguistic survey, please click the link below and begin!

[Anonymized Qualtrics Survey link]”

Appendix B: Output where *which* type is a main effect or interacting with select variables

Friendliness

	Estimate	Std. Error	<i>t</i>	p
Intercept	.19	.27	.72	.47
Which Type (standard)	.07	.5	.19	.85
Which Type * Speaker Gender (Male)	-.22	.5	-.43	.66
Which Type * Speaker Age (younger)	-.1	.5	-.2	.84
Which Type * Participant Education (No degree)	-.17	.28	.59	.55

Humbleness

	Estimate	Std.Error	<i>t</i>	p
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Intercept	.35	.34	1.05	.29
Which Type (standard)	-.24	.46	-0.52	.6
Which Type * Speaker Gender (Male)	.21	.65	.32	.74
Which Type *Speaker Age (younger)	.29	.65	.44	.66
Which Type *Participant Education (No degree)	.3	.28	1.07	.28

Good Communicator

	Estimate	Std. Error	<i>t</i>	p
Intercept	.38	.21	1.77	.07
Which Type (standard)	0.07	.21	0.36	.72
Which Type * Speaker Gender (Male)	-0.01	.37	-0.03	.98
Which Type *Speaker Age (younger)	.42	.37	1.12	.26
Which Type *Participant Education (No degree)	.22	.29	.74	.46

Honesty

	Estimate	Std. Error	<i>t</i>	p
Intercept	0.41	.32	1.28	.2
Which Type (standard)	-0.18	.43	-.04	.97
Which Type * Speaker Gender (Male)	.01	.61	.01	.99
Which Type *Speaker Age (younger)	.13	.61	.21	.83
Which Type *Participant Education (No degree)	.02	.27	.07	.95

Genuineness

	Estimate	Std. Error	<i>t</i>	p
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Intercept	.37	.31	1.21	.22
Which Type (standard)	-.1	.4	-.25	.8
Which Type * Speaker Gender (Male)	-.02	.58	-.03	.97
Which Type *Speaker Age (younger)	.34	.58	.59	.56
Which Type *Participant Education (No degree)	.23	.27	.84	.4

Education

	Estimate	Std. Error	<i>t</i>	p
Intercept	.08	.57	.15	.88
Which Type (standard)	-.1	.79	-.13	.9
Which Type * Speaker Gender (Male)	-.11	1.12	-.1	.92
Which Type *Speaker Age (younger)	.27	1.12	.24	.8
Which Type *Participant Education (No degree)	.12	.24	.52	.6

Professional

	Estimate	Std. Error	<i>t</i>	p
Intercept	.23	.52	.43	.67
Which Type (standard)	-.19	.73	-.25	.69
Which Type * Speaker Gender (Male)	-.05	1.03	-.05	.96
Which Type *Speaker Age (younger)	.26	1.03	.25	.8
Which Type *Participant Education (No degree)	.36	.24	1.47	.14

Successfulness

	Estimate	Std. Error	<i>t</i>	p
Intercept	-.7	.39	-1.8	.86

Which Type (standard)	1.81	.53	.003	.97
Which Type * Speaker Gender (Male)	-.03	.75	-.04	.68
Which Type *Speaker Age (younger)	-.04	.75	<.001	1
Which Type *Participant Education (No degree)	1.18	.28	.04	.67

Intelligence

	Estimate	Std. Error	<i>t</i>	p
Intercept	.08	.4	.2	.84
Which Type (standard)	.02	.56	.03	.97
Which Type * Speaker Gender (Male)	-.12	.79	-.15	.88
Which Type *Speaker Age (younger)	.14	.79	.17	.86
Which Type *Participant Education (No degree)	.16	.29	.55	.59

Influence

	Estimate	Std. Error	<i>t</i>	p
Intercept	.16	.33	.49	.72
Which Type (standard)	-.16	.44	-.35	.72
Which Type * Speaker Gender (Male)	.03	.63	.04	.97
Which Type *Speaker Age (younger)	.21	.63	.33	.74
Which Type *Participant Education (No degree)	.29	.28	1.03	.3