

# Might should we consider this?: Patterns of double modal inversion in Southern United States English

by

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Thesis Submitted in Partial Fulfillment of the  
Requirements for the Degree of  
Master of Arts

in the  
Department of Linguistics  
Faculty of Arts and Social Sciences

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**SIMON FRASER UNIVERSITY**  
**Summer 2018**

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## Ethics Statement



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# Abstract

The Southern United States English (SUSE) double modal construction is of structural interest since clauses containing iterative modals are impossible in standard varieties of English. Existing analyses disagree regarding the interaction of double modals with syntactic processes, including subject-auxiliary inversion. Experiments testing double modal inversion patterns have yielded mixed results and differ in methodology and regional scope, rendering comparisons infeasible. To address these issues, an acceptability judgment task study was conducted with speakers of Kentucky, Tennessee, and Texas Englishes. The results show that joint inversion (e.g. *Might should we...?*) is preferred in some SUSE varieties; however, at least in Tennessee, second modal inversion (e.g. *Should we might...?*) is also acceptable. This variation is not immediately reconciled with previous analyses, but is captured under a novel, Tree Adjoining Grammar based model. By furthering empirical understanding of English syntactic variation, these results facilitate evaluation of theoretical analyses for SUSE double modals.

**Keywords:** Double modal construction; multiple modal construction; English dialects; Southern United States English; syntax

# Acknowledgements

This work has been made possible by virtue of the generosity and support of numerous individuals.

First, I am immeasurably grateful to my senior supervisor Dr. Chung-hye Han for ceaselessly offering guidance and support throughout all stages of this research process. Her sound wisdom and meticulous example have not only shaped the outcome of this work but have greatly inspired me as a researcher.

I am also immensely grateful to the members of my examining committee: I thank Dr. Keir Moulton for his continual support over the past two years and for his insightful feedback, and Dr. Tonia Bleam for her encouragement and for her valuable comments, which have led to the overall betterment of this work.

I sincerely thank Dr. Jennifer Cramer, Dr. Ashley Farris-Trimble, Dr. Jessi Grieser, Dr. J. Daniel Hasty, and Dr. Theresa McGarry for their generous assistance with data collection during this study.

I also gratefully acknowledge the financial support I have received during my graduate studies from SSHRC Insight Grant 435-2014-0161 to Dr. Chung-hye Han.

Many others have influenced my scholarly development over the past few years. In particular, I thank Dr. Dennis Storoshenko for kindling my interest in syntax and Tree Adjoining Grammars, and for first introducing me to double modals. To the members of the Experimental Syntax Lab, thank you for being a receptive audience for many of my first research talks, and for generously offering your feedback and support.

To my parents, thank you for instilling me with diligence and a love for learning—and especially to my father, Dr. Carey Williamson, thank you for always being the first and most avid reviewer of my work. To my mother Sue, my sister Jennifer, and the rest of my family, thank you for believing in me and supporting me.

Finally, to my partner Logan, who has shared in every joyful and painful step of this journey: I would not be where I am today were it not for your steadfast faith. *Gi melin, mellon mhuin!*

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# List of Abbreviations

Adv	Adverb	N	Noun
AdvP	Adverb Phrase	Neg	Negation
C	Complementizer	NegP	Negation Phrase
CETM	Condition on Elementary Tree Minimality	NP	Noun Phrase
CP	Complementizer Phrase	Op	Operator
D	Determiner	Perf	Perfect
Decl	Declarative	PerfP	Perfect Phrase
DM	Double modal construction	Q	Question
DP	Determiner Phrase	S	Sentence
EPP	Extended Projection Principle	SoT	Sequence of Tense
IP	Inflectional Phrase	Spec	Specifier
M	Modal	SUSE	Southern United States English
MM	Multiple-modal construction	T	Tense
Mod	Modal	TAG	Tree Adjoining Grammar
ModP	Modal Phrase	TP	Tense Phrase
MP	Modal Phrase	V	Verb
		VP	Verb Phrase

# Chapter 1

## Introduction

Southern United States English (henceforth SUSE) is among the dialects of English that permit a double modal construction, as illustrated in (1).<sup>1</sup>

- (1) a. I don't think I have any grants you **might could** apply for.  
b. This thing here I **might should** turn over to Ann. (Di Paolo, 1989, p.195)

Lexical combinations of double modals are subject to individual and regional variation; however, in SUSE, first-place modals are typically limited to *may*, *might*, and (occasionally) *must*, which may be followed by any one of a range of possible second-place modals (Mishoe and Montgomery, 1994; Montgomery and Nagle, 1994; Fennell and Butters, 1996). The combinations *might could*, as in (1a), and *might should*, as in (1b), are among the forms most frequently attested and most commonly accepted in elicitation studies (Butters, 1973; Coleman, 1975; Di Paolo et al., 1979; Hasty, 2011).

Double modals are used, at least to some extent, by SUSE speakers from all age groups, genders, and social classes (Bernstein, 2003). Attestations have been made throughout the Southern United States (Montgomery, 1998), although research has largely focused on usage in individual regional varieties.<sup>2</sup> The construction is most frequently employed in informal, one-on-one settings, such as conversations with family and friends or negotiations with strangers, wherein it serves as a pragmatic expression of indirectness or politeness (Mishoe and Montgomery, 1994).

<sup>1</sup>SUSE refers not to a homogeneous dialect, but rather to the generalized linguistic patterns found in a range of regional varieties. SUSE dialects are mainly spoken in the southern coastal states, from Virginia to Texas, and in Arkansas, Kentucky, Oklahoma, Tennessee, and West Virginia (Carver, 1987; Hickey, 2014).

<sup>2</sup>For instance, Feagin (1979) discusses the double modal construction as found in Alabama; Close (2004) in Arkansas; Butters (1973) and Coleman (1975) in North Carolina; Mishoe and Montgomery (1994) in North and South Carolina; Hasty (2011, 2012a,b) in Tennessee; and Pampell (1975), Boertien (1979, 1986), Di Paolo et al. (1979), and Di Paolo (1986, 1989) in Texas.

Double modals are not a unique linguistic feature of SUSE.<sup>3</sup> Combinations of modals are attested, for example, in African American Vernacular English (Martin and Wolfram, 1998); Jamaican Creole (Bailey, 1966); certain dialects of Northern British English, such as Northumberland and Tyneside Englishes (Beal, 1993); Ulster Scots (Montgomery and Nagle, 1994); and varieties of English and Scots spoken in Scotland (Brown and Millar, 1980; Brown, 1990; Miller, 1993; Bour, 2014).<sup>4</sup>

Given these facts, the double modal construction is of theoretical interest for at least two reasons: (i) in terms of syntactic structure, it raises the question of how multiple modals are incorporated into the clause since such iteration is impossible in standard varieties of English (Nagle, 1995); and (ii) as a widespread feature of many dialects, it should be naturally explained in a theoretically adequate description of English.

While various generative models have been proposed for the double modal construction, three main approaches are notable in the SUSE literature. Some authors, such as Battistella (1995), consider the first modal to be an adverbial modifier. Others, such as Boertien (1986), construe the double modal as a syntactic unit under a single head. Recently, Hasty (2012b), among others, has proposed that the first modal heads a distinct functional projection.

The existing analyses differ in their predictions for the interaction of double modals with various syntactic processes, such as subject-auxiliary inversion in questions. Hence, inversion data may provide a means of evaluating theoretical approaches to the SUSE double modal construction. However, while elicitation studies have tested for double modal inversion in SUSE, the results are mixed.

The logically possible subject-auxiliary inversion patterns for *might could* in a *yes/no* question are illustrated in (2).

- (2) a. **Might could** you go to the store for me?
- b. **Could** you might go to the store for me?
- c. **Might** you could go to the store for me? (Hasty, 2012b, p.1718)

Among the three large-scale elicitation studies that have used inversion data to date, Di Paolo et al. 1979 finds joint double modal inversion, as in (2a), to be preferred in Texas English, whereas Di Paolo 1986 finds it to be marginal in Texas English as compared to inversion of the second modal, as in (2b). Finally, Hasty 2012a finds second modal inversion to be preferred in Tennessee English. No study to date has found first modal inversion, as

<sup>3</sup>As Fennell and Butters (1996) stress, it is the “mechanism” for modal combination, not the lexical combinations themselves, which multiple-modal dialects have in common. For example, *will can* is frequently attested in Northern British English and Scots, but does not seem to occur in modern SUSE (Montgomery and Nagle, 1994).

<sup>4</sup>Historically, it has been proposed that the construction was brought to the Southern United States by settlers speaking Ulster Scots (Montgomery and Nagle, 1994) or varieties of Northern British English (Fennell and Butters, 1996).

in (2c), to be generally acceptable. Since the existing studies used differing experimental methods in different varieties of SUSE, a cross-study comparison is not feasible.

To explore the accepted patterns of double modal inversion in SUSE, an acceptability judgment task study was conducted with speakers of Kentucky, Tennessee, and Texas Englishes. The results show that joint double modal inversion is preferred in some varieties of SUSE. However, at least in Tennessee, inversion of the second modal is also viable.

These results cannot be immediately reconciled with previous theoretical analyses, which exclusively predict the availability of joint, second modal, or both joint and second modal inversion. To adequately account for observed variations in the accepted patterns of inversion, one potential avenue is a Tree Adjoining Grammar (henceforth TAG) based model of double modals, in which first-place modals are introduced via separate auxiliary trees that adjoin to the main clausal elementary tree.

This thesis is organized as follows. The current chapter has given a brief overview of the SUSE double modal construction. Chapter 2 reviews the mixed evidence for double modal inversion in questions and outlines the inversion patterns predicted by the three main theoretical approaches. Chapter 3 presents an experiment that explored the acceptability of double modal inversion patterns in three regional varieties of SUSE. Chapter 4 advances a potential account of the findings in a TAG-based syntactic framework. Chapter 5 concludes with an overall summary as well as directions for future work.

## Chapter 2

# Literature Review

Since first discussed theoretically in Labov et al. 1968, SUSE double modals have been subject to various generative analyses on the basis of naturalistic data collection as well as numerous elicitation studies. Nevertheless, there is mixed evidence regarding the accepted patterns of double modal inversion in questions, and these empirical discrepancies are reflected in the theoretical treatments.

This chapter presents the evidence for double modal inversion patterns in SUSE followed by a review of previous theoretical approaches and their divergent predictions for the behaviour of double modals in questions.

### 2.1 Evidence for double modal inversion patterns

This section reviews the extant evidence for subject-auxiliary inversion of either one or both modals in a SUSE double modal construction in questions. Data from naturalistic studies, as compiled in Reed and Montgomery’s (n.d.) corpus, are considered first. Subsequently, the results of previous elicitation studies (Coleman, 1975; Pampell, 1975; Boertien, 1979; Di Paolo et al., 1979; Di Paolo, 1986; Close, 2004; Hasty, 2012a) are described.

#### 2.1.1 Naturalistic evidence

Naturalistic data are scarce for the usage of double modals in questions in SUSE. Drawing on published and unpublished sources, Reed and Montgomery (n.d.) have compiled almost 2,000 examples of naturalistic and elicited multiple-modal constructions in SUSE and other varieties of English. Among their sources for naturalistic SUSE data, only a few attest double modals in *yes/no* and *wh*-questions (Skipper, 1980; Boertien, 1986; Di Paolo, 1986; Mishoe and Montgomery, 1994; Elzman, 2007; Reed, 2011).<sup>1</sup> While inversion of the second modal in a double modal construction has been attested in spontaneous speech, inversion

<sup>1</sup>Aside from *yes/no* and *wh*-questions, no other question types, e.g. tag questions, appear in Reed and Montgomery’s (n.d.) naturalistic SUSE data.

of the first modal or of both modals has not been attested in any of the sources compiled in Reed and Montgomery’s (n.d.) corpus.

Double modal inversion in *yes/no* questions has been attested in Texas as well as in North and South Carolina. For Texas English, Boertien (1986) and Di Paolo (1986) each report only two instances of second modal inversion—once for *might could* and once for *might would*—as shown in (3) and (4), respectively.

- (3) a. Could you might come over here for a minute? (Boertien, 1986, p.305)
- b. Would you might want to let your sister-in-law do that? (ibid.)
- (4) a. Heather, could you might find you a place somewhere? (Di Paolo, 1986, p.148)
- b. Would you might wanna wait til the 8 o’clock flight when it’s cheaper? (ibid.)

In their corpus of 236 double modal utterances, overheard and recorded over a period of ten years in North and South Carolina, Mishoe and Montgomery (1994) report only sixteen examples of *yes/no* questions. All cases involve second modal inversion of *might could* (13), *might would* (2), or *might should* (1). One further example of second modal inversion of *might would* in South Carolina is reported by Skipper (1980).

Double modal inversion in *wh*-questions in SUSE is much rarer. Only one instance of second modal inversion of *might could* in a *wh*-question is reported for South Carolina, given in (5); one further instance of second modal inversion of *may would* is reported for Virginia, given in (6).

- (5) How could you might do this? (Reed, 2011)
- (6) We’ll send you a document with questions in it, like  
“‘What additional things would we may need from you...?’” (Elsman, 2007)

The paucity of the question data limits any purely naturalistic investigation into patterns of double modal inversion in SUSE. While only second modal inversion has been attested in spontaneous speech, the number of examples is too small to conclude whether this is the only possible pattern. Thus, the data must be supplemented by elicitation studies to accurately establish the range of available forms.

Moreover, naturalistic question data are only available for certain regions of SUSE, in particular, Texas and North and South Carolina. This geographical limitation precludes an investigation of patterns in other double modal varieties, such as Kentucky English (Montgomery, 1998) or Tennessee English (Hasty, 2011, 2012a,b). The naturalistic data set is also too small and geographically restrictive to determine whether the available inversion pattern(s) are subject to inter-regional variation.

For these reasons, previous works—and the present study—draw on elicitation methods to investigate patterns of double modal inversion in SUSE.

### 2.1.2 Evidence from elicitation studies

While early elicitation work on the SUSE double modal construction aimed to determine which combinations are accepted (Butters, 1973), numerous studies have since investigated the behaviour of double modals in diverse syntactic environments. Using various methods, elicitation studies have examined patterns of double modal inversion in questions in Texas English (Pampell, 1975; Boertien, 1979; Di Paolo et al., 1979; Di Paolo, 1986), Tennessee English (Close, 2004; Hasty, 2012a), and other SUSE varieties (Coleman, 1975; Close, 2004).

#### Evidence from Texas English

Early studies of the double modal construction in Texas English relied on acceptability judgments elicited during interviews with small participant groups (Pampell, 1975; Boertien, 1979). Later work included sentence production tasks performed with larger samples of speakers (Di Paolo et al., 1979; Di Paolo, 1986).

Pampell (1975) interviewed six participants in Austin, Texas. Four participants had been raised in Texas, one in Oklahoma, and one in Florida. During the interviews, participants were asked for acceptability judgments on orally-presented sentences containing the double modal combinations *may can*, *might can*, *might could*, *might oughta*, *might should*, *might will*, and *might would* as well as the triple modals *might could oughta* and *might should oughta*.<sup>2</sup> The stimuli involved multiple-modal constructions in eight syntactic contexts, including inversion in *yes/no* questions.

Pampell (1975) reports that *yes/no* questions containing double modals were, at best, marginally acceptable for his participants; however, questions with second-person subjects, as opposed to third-person subjects, were more acceptable. Overall, only three participants accepted any instance of second modal inversion. Two found second modal inversion acceptable in *you might could* and marginally acceptable in *John might could/John might would*, while one only accepted such inversion in *John might would*. Of the above three participants, two marginally accepted joint inversion in *you might could*. One of these two participants also accepted joint inversion in *they might should*; the other marginally accepted joint inversion in *John might would*. Inversion of the first modal was uniformly rejected for *might could*, but was accepted for *might oughta* by three participants and for *should oughta* by all participants who allowed this combination.

Significantly, first modal inversion was only found to be possible in conjunction with second-place *oughta*. In SUSE, modal + *ought(a)* combinations behave anomalously with respect to various syntactic processes (Boertien, 1986), and Hasty (2012b) argues that such

<sup>2</sup>While many studies in this section consider double (or triple) modals containing *ought(a)* as the last element, recent research suggests that these are not true double (or triple) modals, but rather single (or double) modals followed by the main verb *ought* + infinitival *to* (Hasty, 2012b). These data are included for completeness, but should not be taken as evidence for SUSE double modal patterns in general.



combinations are not true double modals: see footnote 2. As such, the apparent instances of first modal inversion with modals + *oughta* found in Pampell 1975—as well as later studies in this section—should not be considered representative of SUSE double modals.

Using similar methods, Boertien (1979) interviewed five participants who had been born, raised, and educated in Texas, and who self-reported colloquial use of the double modal construction since childhood. Boertien (1979) elicited acceptability judgments for the modal combinations *may can*, *may could*, *might can*, *might could*, *might oughta*, *might should*, *might would*, *should oughta*, and *might should oughta* with respect to negative placement, contraction, subject-auxiliary inversion, and tag question formation. He reports that only one participant accepted second modal inversion (in *may could*, *might can*, and *might could*); another participant accepted joint inversion of *might can*. As in Pampell 1975, first modal inversion was rejected except in conjunction with *oughta*: two participants accepted first modal inversion in *might oughta*, and three participants accepted first modal inversion in *should oughta*.

The early interview studies in Pampell 1975 and in Boertien 1979 relied on small population samples and hence may not be generalizable. However, as noted by Boertien (1979), both studies found idiolectal variation in inversion patterns, as well as in which lexical combinations of modals were able to invert.

Di Paolo et al. (1979) used a sentence completion task with an undisclosed number of Texas English speakers. All participants reported that they had grown up in Texas and that their parents had also grown up in Texas. During each trial, participants were orally presented with a context sentence (e.g. (7a)) and then a test sentence containing a single modal (e.g. (7b)). They were asked to repeat the test sentence, with the option of adding a second modal in any position, if this sounded natural.<sup>3</sup> An example of a declarative trial is given in (7).

- (7) a. How would you fill in the following dialogue? If someone says to you,  
       “I’m going to the store—can you use some eggs?”, you answer:  
       b. “I might use some.” (Di Paolo et al., 1979, p.42)

Di Paolo et al. (1979) report that in questions, participants tended to add a second modal in a fronted position, resulting in joint double modal inversion. However, the authors are unclear as to how frequently other inversion patterns were used, or whether they were used at all.

There are certain other difficulties present in this study. Di Paolo et al. (1979) neglect to report the question items that were used during testing. Hence, it is unclear whether there

<sup>3</sup>Di Paolo et al. (1979) asked their interviewers to tell participants to “respond with words that [they] would most naturally use when talking with friends the same age” and to explain to participants that they were not being tested for “correctness.”

was any variation in inversion patterns across lexical combinations of modals. Moreover, their data were collected by 250 undergraduate students as part of an assignment in an introductory linguistics course at the University of Texas. As such, the data may reflect experimenter effects due to the inexperience of the interviewers.

Di Paolo (1986) used sentence imitation, among other types of tasks, during interviews with 62 speakers of Texas English. 26 participants were recruited from Rusk County, in East Texas; 36 were from Dawson County, in West Texas. Each group consisted of long-time, relatively non-mobile residents of the area, and included both females and males as well as three generational age groups. The sentence imitation task tested the acceptability of the common modal combinations *might could*, *might oughta*, *might should*, and *might would* with negation, the perfect auxiliary *have*, and subject-auxiliary inversion. During each inversion trial, participants were orally presented with a context sentence (e.g. (8a)), followed by a sequence of alternative *yes/no* question formulations (e.g. (8b)). Participants were asked to repeat which question sounded the most natural.<sup>4</sup> If none of the sentences sounded natural, a participant was asked to report “how he or she would say it or how people in the area would say it.” An example trial is given in (8).

- (8) a. Billy is a very polite boy. Yesterday he said,  
b. i. “Mom, might could I write on the walls?”  
ii. “Mom, might I could write on the walls?”  
iii. “Mom, could I might write on the walls?” (Di Paolo, 1986, p.128)

Each modal combination in Di Paolo 1986 was analysed individually; the results are summarized in Table 2.1.

Combination	Joint		First		Second		Other	
<i>might could</i>	8	(25%)	3	(9%)	20	(63%)	1	(3%)
<i>might oughta</i>	2	(11%)	11	(58%)	6	(32%)	0	(0%)
<i>might should</i>	11	(55%)	2	(10%)	6	(30%)	1	(5%)
<i>might would</i>	3	(27%)	1	(9%)	7	(64%)	0	(0%)

Table 2.1: Frequency of inversion patterns by modal combination (Di Paolo, 1986, p.143)

Di Paolo (1986) reports a speaker preference for inverting the second modal in *might could* (63%) and in *might would* (64%). No dominant pattern emerged for *might should*, although joint inversion (55%) was more frequent than second modal inversion (30%). First modal inversion was only preferred in *might oughta* (58%). Di Paolo (1986) concludes that there is an overall preference for second modal inversion in Texas English, but speaker judgments are subject to lexical variation.

<sup>4</sup>Di Paolo (1986) asked participants to respond “according to what they and their family and friends would say in natural, normal conversation.”

One potential difficulty with this study, noted by Di Paolo (1986), is that the presentation order of the question formulations was not randomized. Thus, the results may reflect a bias toward the alternative that participants heard last due to a serial position effect (Colman, 2009). For example, for *might could* items, the last condition was most commonly second modal inversion; for *might should* items, it was most commonly joint inversion.

In summary, elicitation studies concerning double modal inversion patterns in Texas English have used a range of methods: acceptability judgment tasks (Pampell, 1975; Boertien, 1979), sentence completion (Di Paolo et al., 1979), and sentence imitation (Di Paolo, 1986). These studies differ in their findings: while Pampell 1975, Boertien 1979, and Di Paolo 1986 find an overall preference for second modal inversion, with joint inversion as a marginal alternative (possibly restricted to certain modal combinations), Di Paolo et al. 1979 finds a preference for joint inversion in Texas English.

### Evidence from Tennessee English

Two studies have addressed patterns of double modal inversion in Tennessee English using various elicitation methods (Close, 2004; Hasty, 2012a).

Close (2004) investigated the idiolect of a single Tennessee English speaker. She used an acceptability judgment questionnaire testing the behaviour of double modals in *yes/no* and *wh*-questions. Close (2004) reports that this speaker only accepted second modal inversion in *yes/no* questions; however, in *wh*-questions, either the first or the second modal could invert. The resultant questions reportedly had distinct interpretations, as shown in (9).

- (9) a. What might we could read this week? (questioning *what* to read)  
 b. What could we might read this week? (questioning *whether* to read)  
 (Close, 2004, p.168)

There are certain limitations evident in this study. First, since Close (2004) only considers data from one speaker, the results may not be generalizable to Tennessee English. Moreover, Close (2004) does not report the items used in her questionnaire; as such, it is unclear whether her results obtain for any modal combination other than *might could*. While Close's (2004) finding that her participant accepted more patterns in *wh*-questions than in *yes/no* questions is curious, due to the small size of her sample and the extreme rarity of double modal *wh*-questions overall, it is unclear whether this result is anything more substantial than statistical noise.

Hasty (2012a) performed face-to-face interviews with 30 speakers of Tennessee English. Participants were recruited from the Tri-Cities area (Bristol, Johnson City, and Kingsport) in Northeast Tennessee. Participants were equally distributed by gender (female, male) and age range (19–29, 30–59, 60+). Hasty (2012a) investigated the range of acceptable double modal combinations as well as strategies for negation and question formation. To test for acceptable inversion patterns, he used a respondent-generated question formation

task and a binary forced-choice task. In the first task, participants were orally presented with declarative sentences containing double modals. They were then asked to produce minimally-distinct *yes/no* question forms of these sentences. In the second task, participants were asked to choose “the best” between two alternative question formulations, which included joint and second modal inversion.

The respondent-generated question task revealed a preference for second modal inversion (63%). The forced-choice task revealed the same preference (70%). There were no significant differences in the preferences of speakers from differing genders or age groups. Hasty (2012a) concludes that only second modal inversion is possible in Tennessee English.

Although Hasty (2012a) does not report the question items used during testing, at least the question formation task only used *might could*. Thus, it is unclear whether double modal inversion patterns in Tennessee English are subject to lexical effects.

In summary, a single-speaker acceptability judgment task study (Close, 2004) as well as question-generation and forced-choice tasks (Hasty, 2012a) suggest an overall preference for second modal inversion in Tennessee English.

### **Evidence from other varieties**

This section considers two further SUSE studies that have addressed the behaviour of the double modal construction in questions (Coleman, 1975; Close, 2004).

Coleman (1975) combined naturalistic observation over one year of field work in the Upper Piedmont region of North Carolina with an acceptability judgment questionnaire administered to 197 students at the University of North Carolina at Greensboro. He reports that in *yes/no* questions, inversion of the second modal is possible, at least in *might could* and in the triple modal *might should ought*; joint inversion of the first and second modals is also possible in *might could*, *might should*, and *might should ought*, though not in *might can*, *might ought*, or *might would*. However, Coleman (1975) does not report any statistics for these patterns, nor is it made clear whether they are drawn from naturalistic or from elicited data. As such, generalized conclusions cannot be drawn from these data.

Close (2004) also reports the results of an acceptability judgment questionnaire that was emailed to four participants born and/or raised in Arkansas. Her question items tested inversion patterns for *might could*, *might should*, and *might would*. Close (2004) reports that only three participants accepted any form of double modal inversion. For *might could*, two participants accepted second modal inversion; one accepted joint inversion. For *might should* and *might would*, only one participant accepted second modal inversion; joint inversion was uniformly rejected. She concludes that there is a preference for second modal inversion in Arkansas English, although results obtained from such a small sample may not be generalizable.

### 2.1.3 Summary

This section has outlined the extant evidence for double modal inversion patterns in SUSE. Naturalistic attestations of double modals in questions are scarce; however, a number of elicitation studies have investigated the range of available inversion patterns using a variety of techniques, such as acceptability judgment tasks and production tasks. Table 2.2 summarizes the previous studies in terms of their general parameters and overall findings.

Study	Task	Participants		Inverted Modal(s)
Pampell 1975	Acceptability judgment	6	(TX)	Second modal (joint marginal)
Boertien 1979	Acceptability judgment	5	(TX)	Second modal (joint marginal)
Di Paolo et al. 1979	Sentence completion	n/a	(TX)	Joint
Di Paolo 1986	Sentence imitation	62	(TX)	Second modal (joint marginal)
Close 2004	Acceptability judgment	1	(TN)	Second modal
Hasty 2012a	Question formation, forced choice	30	(TN)	Second modal
Coleman 1975	Observation, acceptability judgment	n/a	(NC)	Second modal, joint
Close 2004	Acceptability judgment	4	(AR)	Second modal

Table 2.2: Summary of inversion patterns as found in previous studies

The previous studies have differed in terms of their participant samples as well as their overall findings. Nevertheless, to date, such studies have largely collected categorical, not graded, question data.

First, the reviewed studies vary in the size and the regional scope of their population samples. Certain studies have been of limited generalizability, relying on samples of one to six native speakers (Pampell, 1975; Boertien, 1979; Close, 2004). Other studies have drawn on larger samples (Di Paolo et al., 1979; Di Paolo, 1986; Hasty, 2012a), yet no study to date has compared any considerable number of speakers from more than one variety of SUSE. Moreover, while prior work has focused on inversion patterns in certain geographical areas (e.g. Texas English, Tennessee English), other varieties of SUSE—such as Kentucky English—remain to be investigated.

The reviewed studies also diverge in their findings for speaker preferences regarding double modal inversion patterns. With the notable exception of Di Paolo et al. 1979, which reports joint inversion to be preferred in Texas English, most of the studies reviewed in this section find second modal inversion to be the dominant pattern in SUSE. Among the other large-scale studies, Di Paolo 1986 suggests that joint inversion is also at least marginally acceptable in Texas English, while Hasty 2012a argues that joint inversion is unacceptable

in Tennessee English. Methodological considerations, such as differences in tasks, sampling procedures, and modal combinations used, impede a cross-study comparison of inversion patterns in SUSE. Thus, it is unclear whether discrepancies in the results of earlier studies are due to methodological or true regional differences.

Finally, the previous studies have largely focused on categorical data collection methods, such as binary acceptability judgment tasks (Pampell, 1975; Boertien, 1979; Close, 2004) and forced-choice tasks (Di Paolo, 1986; Hasty, 2012a). Such methods preclude an investigation of any subtle, gradient differences in the data (Keller, 2000). While most studies have established a qualitative difference in acceptability between second modal inversion and joint inversion in SUSE, they cannot be used to determine the size of this difference (Schütze and Sprouse, 2013). Thus, it remains unclear whether joint modal inversion is acceptable (though possibly degraded from second modal inversion), marginal, or unacceptable in SUSE.

## 2.2 Theoretical analyses of the double modal construction

Theoretical analyses of the SUSE double modal construction mainly diverge in the structural analysis of the first modal. Some works consider this first modal to be an adverb or adverbial, modifying the second modal (Labov, 1972; Battistella, 1995; Close, 2004). Others place both modals under a single syntactic head (Boertien, 1986; Di Paolo, 1989). Finally, some accounts treat the first modal as the head of its own functional projection, distinct from that of the second modal (Nagle, 2003; Hasty, 2012b).

This section outlines these main approaches to the SUSE double modal construction as well as their predictions regarding the possibility of joint, first, and second modal inversion.

### 2.2.1 The first modal as an adverbial

The notion that SUSE first-place modals (e.g. *may*, *might*) function like adverbs such as *maybe* and *probably* is first articulated in Labov et al. 1968 and formally presented in Labov 1972. Later works refine the structural properties of these modals (Battistella, 1995; Close, 2004).

Labov’s (1972) fundamental claim is that SUSE first-place modals are “functioning formally as adverbs.” In contrast to true auxiliary verbs, first-place modals are assumed to lack syntactic tense and to occupy adverbial positions in the clause.

While Labov (1972) finds “no clear evidence” for the behaviour of double modals in questions, he postulates that only second modal inversion should be possible, as in (10).

- (10) a. He might could do that.  
       b. Could he might do that? (Labov, 1972, p.58)

Labov’s (1972) analysis predicts that the first modal, as an adverbial, cannot be the target of the syntactic process of subject-auxiliary inversion, either on its own (11a) or as part of joint inversion (11b).

- (11) a. \* Might he could do that?  
 b. \* Might could he do that?

This adverbial analysis may face empirical problems if, as Di Paolo et al. (1979), Di Paolo (1986), and others have suggested, joint inversion is at least marginally acceptable in some varieties of SUSE (see Section 2.1.2). Under an adverbial analysis, clause-initial *might* in an interrogative such as (11b) cannot be derived through transformational movement.

An alternative derivation of (11b) is motivated by Close (2004), who suggests that *might* can be base-generated in a clause-initial adverbial position: compare the initial placement of the adverbs in (12) in questions spoken with rising intonation.

- (12) a. Maybe we could come?  
 b. Perhaps you should go? (Close, 2004, p.167)

This proposal is no less problematic, however. If a clause-initial adverbial position is postulated for *might* in order to derive (11b), it remains unclear why this position is unavailable in the case of (11a). Under Close’s (2004) analysis, first modal “inversion” should be possible, as it would be structurally analogous to the rising intonation questions in (12).

There are other empirical difficulties inherent in Labov’s (1972) adverbial analysis, such as the distinct distributions of adverbs and first-place modals in SUSE, the licensing of negation, and the positioning of the perfect auxiliary.

First, adverbs such as *probably* can adjoin at diverse positions within a clause, whereas first-place *might* is only licit in SUSE where it precedes another modal, as shown in (13).

- (13) a. I (probably) could (probably) go to the store (probably).  
 b. I (might) could (\*might) go to the store (\*might). (Hasty, 2012b, p.1720)

Second, an adverb cannot license negation before a single modal; in SUSE, for many speakers, first-place *might* can (Coleman, 1975; Pampell, 1975; Boertien, 1979; Di Paolo, 1986; Hasty, 2012a), as shown in (14).<sup>5</sup>

- (14) a. \* I probably not can go to the store.  
 b. I might not can go to the store. (Hasty, 2012b, p.1720)

<sup>5</sup>Many SUSE speakers also allow negation to follow the second modal, as in (i). Some speakers additionally allow negation to follow both modals, as in (ii); however, negative contraction appears to be limited to the second modal (Coleman, 1975; Pampell, 1975; Boertien, 1979; Di Paolo, 1986; Hasty, 2012a).

- (i) The mother might should not put a blanket over her baby.  
 (ii) He might not couldn’t refuse. (Di Paolo, 1989, p.216–217)

Finally, an adverb cannot license a perfect auxiliary before a modal in the same clause. By contrast, for some speakers of SUSE, the first modal can be immediately followed by *have* or contracted *-’ve/-a* (Coleman, 1975; Di Paolo, 1986; Nagle, 2003), as shown in (15).

- (15) a. \*I possibly have could-a/’ve/have fit the tip of this here pen in it. (Nagle, 2003, p.362)  
 b. I may-a could-a fit the tip of this here pen in it. (ibid.)  
 c. He might have/’ve/-a could done it. (Nagle, 2003, p.352)

Later authors incorporate Labov’s (1972) fundamental claim into structural analyses of the double modal construction by assigning the first-place modal to an adverbial position (Battistella, 1995; Close, 2004).<sup>6</sup>

For Battistella (1995), the “spurious” or “defective” first-place modal attaches at T’ to modify the second modal, which is located in T.<sup>7</sup> In this configuration, T licenses the first-place modal through Head Feature Licensing (Travis, 1988). An adverbial structure for *might could* is given in Figure 2.1.

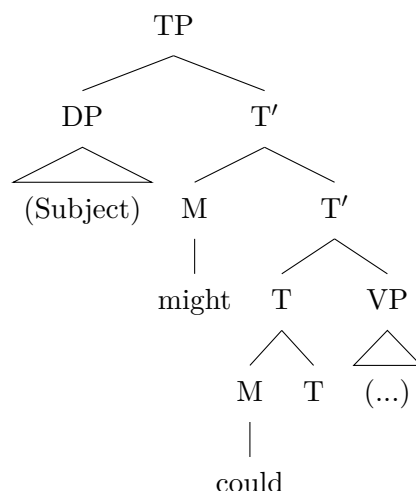


Figure 2.1: Adverbial structure for *might could*

Battistella (1995) asserts that the first modal, as an adverbial head, lacks a syntactic tense feature. In contrast to Labov (1972), however, Battistella (1995) claims that the first modal retains a morphological [tense] feature, which is distinct from the syntactic [TENSE] present on T. He argues that syntactic processes such as inversion target syntactic [TENSE], and hence only affect the second modal.

<sup>6</sup>For earlier structural approaches to the adverbial analysis, see Whitley 1975 and Battistella 1991.

<sup>7</sup>While Battistella (1995) refers to IP in his analysis, for consistency, TP structure is used throughout this chapter.



Battistella’s (1995) adverbial analysis predicts the availability of second modal inversion (e.g. (10b)) through T-to-C movement. Since the first modal is a modifier, and not in T, raising of the first modal as in (11a) or of both modals as in (11b) is disallowed.

Nevertheless, Battistella (1995) suggests that the pattern in (11b) may also be accounted for if the first modal is base-generated as a modifier to C instead of T. He argues that T-to-C movement of the second modal “can ‘transmit’ the relevant head feature” to enable Head Feature Licensing between C and the first modal. This yields a surface form that resembles the result of joint raising. Note that in the absence of T-to-C movement, such licensing is impossible: independent first modal “inversion” as in (11a) is therefore ruled out. Thus, in contrast to Labov (1972), Battistella (1995) can account for the possibility of joint and second modal (but not first modal) inversion.

Despite this refinement, Battistella (1995) remains unable to account for dialects that only allow joint inversion. Under Battistella’s (1995) analysis, the first modal is an adverbial and hence should not be able to select for the type of clause that it modifies. As such, no mechanism prevents the first modal from attaching at T’ in an interrogative clause: this results in the generation of second modal inversion. For this reason, this analysis cannot be extended to the results of Di Paolo et al. (1979), who report only joint inversion among their Texas English participants.

Overall, the adverbial approach of Battistella (1995) is better able to capture certain empirical facts than that of Labov (1972): through the requirement of Head Feature Licensing with T, Battistella (1995) captures the restricted distribution of first-place modals as compared to adverbs. However, it remains unclear how a first-place modal, as an adverbial, can select for a following NegP, as in (14b), or a following PerfP, as in (15b)–(15c). While Battistella (1995) argues that the first occurrence of the contracted perfect, e.g. in *may-a could-a*, is a reflex of agreement between the modals, this is less clearly the case when the auxiliary only occurs after the first modal, as in (15c).

Close (2004) revisits Labov’s (1972) original intuition in her analysis of the Arkansas English double modal construction, in which she claims the first modal is an adverb adjoined to the left of the projection containing the second modal.<sup>8</sup> In an acceptability judgment task study (see Section 2.1.2), Close (2004) reports that her Arkansas English informants preferred second modal inversion in questions and *not* following the second modal in negative declaratives. Thus an adverbial analysis may be appropriate for this regional dialect, although it cannot be generalized to the inversion patterns recognized by Di Paolo et al. (1979), Di Paolo (1986), and others, or the positioning of negation or a perfect auxiliary between double modals.

<sup>8</sup>Close (2004) presents an alternative two-modal structure for a Tennessee English idiolect; see Section 2.2.3, footnote 13.

In summary, the adverbial approaches of Labov (1972), Battistella (1995), and Close (2004) consider the first modal in a double modal construction to be a modifier, akin to an adverb. In terms of inversion patterns, the fundamental analysis predicts only second modal inversion to be available; however, Battistella (1995) accounts for the additional possibility of a surface form resembling joint inversion. Nevertheless, an adverbial analysis cannot account for a preference for joint inversion, as found in Di Paolo et al. 1979.

## 2.2.2 Both modals under a single head

In contrast to the adverbial analysis first proposed by Labov et al. (1968), various authors have suggested that SUSE first-place modals are true auxiliary verbs. Adopting this view, Boertien (1986) and Di Paolo (1989) develop structural analyses that place the double modal construction under a single syntactic head.

Boertien (1986) posits that the modals in a double modal construction like *might could* are distinct verbal (co-)heads, which are composed under a single syntactic head.<sup>9</sup> A co-headed structure for *might could* is given in Figure 2.2.<sup>10</sup>

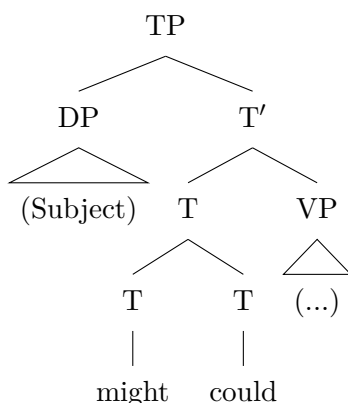


Figure 2.2: Co-headed structure for *might could*

While Boertien (1986) treats both modals as auxiliary verbs, he argues that modals such as *might* are not marked for tense when used as first-place modals.

Boertien's (1986) analysis predicts the availability of joint double modal inversion in questions when T-to-C movement targets the composed T node. However, T-to-C movement may also target the T node which houses the second modal, yielding second modal inversion. First modal inversion, by contrast, is predicted to be disallowed since only tensed auxiliaries can invert in *yes/no* questions in English (Boertien, 1986). Nevertheless, like Battistella (1995), Boertien (1986) predicts that joint inversion can only occur in conjunction with

<sup>9</sup>Mufwene (1994) proposes a similar co-head analysis of the double modal construction.

<sup>10</sup>Boertien (1986) represents auxiliaries as V heads and the maximal projections of clauses as S. His fundamental analysis is articulated in TP structure in this chapter.

second modal inversion: both derive from licit applications of T-to-C movement, and hence no mechanism prevents selection of the lower T node for inversion. This prediction cannot be reconciled with the results of Di Paolo et al. (1979), who only report the use of joint inversion by their Texas English participants.

Certain empirical facts challenge the view that both modals reside under a single head: for example, negation, the perfect auxiliary, and floating quantifiers may intervene between the two modals, as shown in (16).

- (16) a. I might not can go to the store. (Hasty, 2012b, p.1720)  
 b. He might have/'ve/-a could done it. (Nagle, 2003, p.352)  
 c. We might all could go to the store. (Hasty, 2012b, p.1728)

If double modals are sisters composed under a single syntactic head, it should not be possible for a NegP (16a) or a PerfP (16b) to project between them, or for a quantifier (16c) to appear between them.<sup>11</sup>

Di Paolo (1989), in her analysis of Texas English double modals, instead suggests that these constructions are multi-word lexical items. She argues that these modal-modal compounds, “like noun compounds [or] verb-particle constructions,” are idiomatic and form single syntactic (T) heads.

While Di Paolo’s (1989) lexical analysis predicts the availability of joint inversion, its present formulation does not account for second modal inversion.<sup>12</sup> As both modals form a single head, T-to-C movement can only target the construction as a unit: it cannot select the second modal on its own. This prohibition may be problematic if, as Di Paolo (1986) suggests, second modal inversion is preferred in Texas English.

Further empirical difficulties for the lexical analysis include intervening negation, perfect auxiliaries, and floating quantifiers, as in (16). Like Boertien’s (1986) co-head analysis, Di Paolo’s (1989) analysis of double modals as single T heads is unable to account for the addition of medial material.

In summary, Boertien (1986) and Di Paolo (1989) consider both modals in a double modal construction to be auxiliary verbs, residing under a single syntactic head. While these accounts predict the availability of joint inversion, Boertien’s (1986) analysis also allows for second modal inversion. Nevertheless, these analyses face outstanding problems in accounting for materials intervening between the two modals.

<sup>11</sup>While it might be possible to derive the structures in (16) via head movement of the first modal above an intervening head, this solution is nonetheless problematic since it remains to explain the presence of, e.g., a Neg head (16a) or a Perf head (16b) above T in the clausal hierarchy of projections.

<sup>12</sup>While Di Paolo (1989) acknowledges that double modals—like other multi-word lexical items, including verb-particle constructions—display both “unit-like and non-unit-like behavior,” she does not provide an explicit mechanism for the latter. It is therefore unclear how this analysis would account for second modal inversion while simultaneously prohibiting first modal inversion.

### 2.2.3 The first modal as a distinct functional head

Recent analyses of the SUSE double modal construction have proposed that first-place modals are not only auxiliary verbs but heads of distinct functional projections (Nagle, 2003; Hasty, 2012b).

Nagle (2003) posits that double modal constructions are bi-clausal predicates: each modal belongs to a separate CP as a T head. The subject and main verb of the higher clause associated with the first modal are initially null. By a subsequent process of clause union or subject raising, the appropriate word order is derived. Nagle (2003) argues that this bi-clausal structure, in contrast to earlier single-clausal analyses, accounts for the distribution of double modals with intervening material, such as negation or the perfect auxiliary (see Section 2.2.2).

While Nagle (2003) does not provide an explicit account for the inversion data, he suggests that second modal inversion may be favoured due to the first modal's lack of syntactic tense, as in Battistella 1995, or a lexical dispreference for the inversion of *may* and *might* in American English. Nevertheless, a bi-clausal analysis cannot account for joint inversion since this would require C to target two functional heads. This may be problematic if joint inversion is at least marginally acceptable in some varieties of SUSE, as found by Di Paolo et al. (1979), Di Paolo (1986), and others.

In contrast to Nagle (2003), Hasty (2012b) adopts a single-clausal analysis for the double modal construction. Hasty (2012b) posits that the first modal in a double modal construction heads an MP (Modal Phrase), an optional projection above TP. This modal lacks syntactic tense, but hosts an [EPP] feature, which motivates raising of the subject to [Spec, MP]. A merged MP structure for *might could* is given in Figure 2.3.

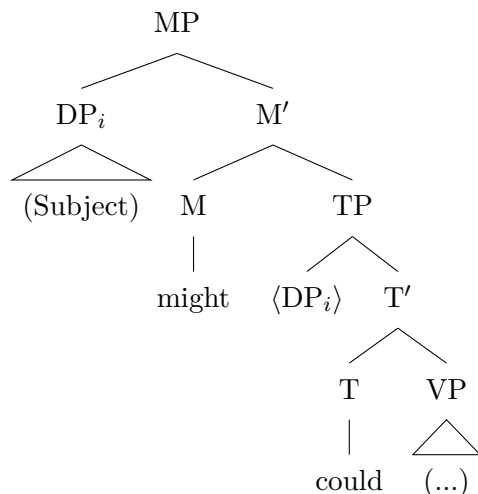


Figure 2.3: Merged MP structure for *might could*

In questions, Hasty (2012b) argues that through Probe and Goal feature checking, C probes its complement for a tense-valued element to raise. Thus, the merged MP analysis predicts that the second modal must undergo T-to-C inversion; since the first modal is tenseless, it cannot. Joint inversion is prohibited since, as in Nagle 2003, this would require C to simultaneously target two heads for raising.<sup>13</sup>

Certain other combinations of auxiliaries and modals are problematic under a merged MP account. As noted in Sections 2.2.1 and 2.2.2, certain SUSE speakers permit a perfect auxiliary between double modals, as in (17a). Though rare, larger combinations of modals are also possible in SUSE (Bour, 2015), such as *may might can* in (17b).

- (17) a. He might have/'ve/-a could done it. (Nagle, 2003, p.352)  
 b. [...Y]ou may might can get one right over there at Wicks.  
 (Mishoe and Montgomery, 1994, p.9)

Since in (17a) the second modal *could* must reside in T, the higher Perf head is unexpected in the clausal hierarchy of projections. Similarly, in (17b), since Hasty (2012b) does not postulate a modal position below T, *can* must be at least in T with *might* occupying a higher M head; yet no higher position exists for *may*. To account for these data, Hasty's (2012b) analysis must at least be extended to allow for higher auxiliaries and multiple M heads.

In summary, Nagle (2003) and Hasty (2012b) analyse double modals as auxiliary verbs, each heading its own functional projection. These functional head analyses predict the availability of second modal inversion but are unable to account for joint inversion, which has been found to be at least marginally acceptable in some varieties of SUSE (Di Paolo et al., 1979; Di Paolo, 1986).

## 2.2.4 Summary

Overall, the three main approaches to the SUSE double modal construction differ in their predictions for patterns of double modal inversion in questions, as summarized in Table 2.3.

Adverbial accounts of the first modal permit second modal inversion (Labov, 1972; Close, 2004), or both joint and second modal inversion (Battistella, 1995), but not joint inversion to the exclusion of the other patterns. Analyses that place both modals under a single head allow joint and second modal inversion (Boertien, 1986) or only joint inversion (Di Paolo, 1989). By contrast, analyses that treat the modals as distinct functional heads only predict second modal inversion to be acceptable (Nagle, 2003; Hasty, 2012b).

<sup>13</sup>Close (2004) develops a similar functional head analysis for the double modal construction in a Tennessee English idiolect. However, in contrast to Hasty (2012b), Close (2004) does not distinguish the first modal as tenseless. Instead, she claims that since both modals are true modals, which modal is selected for inversion depends on which modal head is marked with [Q]. This accords with the results of her acceptability judgment task study (see Section 2.1.2), in which her participant could invert either modal in a *wh*-question. Nevertheless, this analysis, like those of Nagle (2003) and Hasty (2012b), cannot account for joint inversion.

Analysis	Approach	Inverted Modal(s)
Labov 1972	First modal as an adverbial	Second modal
Battistella 1995	First modal as an adverbial	Joint, second modal
Close 2004	First modal as an adverbial	Second modal
Boertien 1986	Both modals as co-heads under a single head	Joint, second modal
Di Paolo 1989	Both modals as a single lexical item	Joint
Nagle 2003	First modal as a distinct T head (bi-clausal)	Second modal
Hasty 2012b	First modal as a distinct M head	Second modal

Table 2.3: Summary of inversion patterns as predicted by previous analyses

## 2.3 Research questions

The elicitation studies reviewed in Section 2.1.2 largely agree that second modal inversion is the dominant pattern for double modals in questions in SUSE. Moreover, no study to date has found first modal inversion to be generally acceptable. However, the previous large-scale studies diverge in their findings for joint inversion. In Texas English, Di Paolo et al. 1979 finds joint inversion to be preferred, whereas Di Paolo 1986 finds it to be marginal as compared to inversion of the second modal. In Tennessee English, Hasty 2012a finds a preference for second modal inversion in contrast to joint inversion. These studies used differing methods in different varieties of SUSE, impeding a cross-study comparison.

The current work addresses these empirical conflicts by quantitatively investigating speaker preferences for double modal inversion in different regions of SUSE. For comparison with earlier studies, data are considered from Tennessee English and Texas English as well as a relatively under-studied regional dialect, Kentucky English. The two empirical questions raised by this study are stated in (18).

- (18) i. Is joint inversion of double modals acceptable in SUSE?  
 ii. Are there regional differences in inversion patterns within SUSE?

As reviewed in Section 2.2, previous syntactic analyses predict the exclusive availability of joint inversion (Di Paolo, 1989), second modal inversion (Labov, 1972; Nagle, 2003; Close, 2004; Hasty, 2012b), or both joint and second modal inversion (Boertien, 1986; Battistella, 1995). Therefore, the answers to the research questions in (18) would not only further an empirical understanding of the range of possible variation in dialectal Englishes, but also provide a means of evaluating theoretical approaches to the SUSE double modal construction.

## Chapter 3

# The Experiment

This experiment investigated the relative acceptability of double modal inversion patterns in questions in SUSE. A web-based acceptability judgment task study was deployed to native speakers of English raised in Kentucky, Tennessee, and Texas. The test stimuli consisted of *yes/no* questions with subject-auxiliary inversion of one or both modals in a double modal construction.

As reviewed in Chapter 2, no study to date has found inversion of the first modal to be generally possible in SUSE; however, the large-scale studies of Di Paolo (1986) and Hasty (2012a) suggest that second modal inversion is acceptable. If joint inversion is also possible, speaker ratings for sentences containing such should be significantly higher than for those containing first modal inversion. By contrast, if joint inversion is disallowed, such sentences should not be rated significantly more acceptable than those with first modal inversion.

This experiment addressed two questions: (i) is joint subject-auxiliary inversion of double modals acceptable in SUSE? Moreover, (ii) are there regional differences in inversion patterns within SUSE?

### 3.1 Method

#### 3.1.1 Participants

247 native English speakers raised in Kentucky, Tennessee, and Texas participated in the study.<sup>1</sup> 94 participants were born and spent the majority of childhood, i.e. up to age 12, in Kentucky. Similarly, 47 participants were born and raised in Tennessee, and 106 participants were born and raised in Texas.

The majority of participants were drawn through third party recruitment from among members of the community at the University of Kentucky, East Tennessee State University,

<sup>1</sup>A total of 290 participants completed the online study. However, only a subset of participants met the inclusion criteria, i.e. were adult native English speakers born and raised in either Kentucky, Tennessee, or Texas.

University of Tennessee, Knoxville, and University of Texas at Austin. Additional third party recruitment was performed through personal correspondence, with acquaintances sharing the study information with potential participants in their personal networks.

Each participant received a link to the online study and completed the task in a single 15–20 minute session at his or her own pace. At the end of the study, a participant had the option of entering his or her email in a draw for one gift card, valued at 50.00 USD.

### 3.1.2 Design

The experiment involved two independent variables (INVERTED MODAL, REGION) in a mixed  $4 \times 3$  factorial design.

INVERTED MODAL was a within-subjects factor with four levels: *joint*, *first*, *second*, and *single*. Thus, the experimental conditions reflected all potential subject-auxiliary inversion patterns with a double modal construction, as exemplified in (19).<sup>2</sup> An additional control condition exhibited single modal inversion, as in a Standard English question containing only one modal (20).<sup>3</sup>

- (19) Potential inversion patterns with *might could*:
- a. **Might could** you go to the store for me? (*joint*)
  - b. **Might** you could go to the store for me? (*first*)
  - c. **Could** you might go to the store for me? (*second*)
- (20) **Could** you go to the store for me? (*single*)

REGION was a between-subjects factor with three levels: *Kentucky*, *Tennessee*, and *Texas*. In order to compare the results of this experiment to those of the previous large-scale studies, samples were drawn from the populations considered in Di Paolo et al. 1979 and Di Paolo 1986, i.e. Texas English speakers,<sup>4</sup> and Hasty 2012a, i.e. Tennessee English speakers.

<sup>2</sup> *Yes/no* questions were used instead of *wh*-questions in the test items since, as addressed in Chapter 2, double modals have been very rarely attested in *wh*-questions.

<sup>3</sup> The modal in the *single* condition corresponded to the second modal in the other conditions, e.g. *could*. Since first-place *might* primarily contributes to the “hedging, politely suggestive, and nonintrusive” sense of the double modal construction (Di Paolo, 1989), this accordance ensured that the underlying sense of the construction—e.g. ability or permission—was maximally preserved in the *single* condition.

<sup>4</sup> Although Di Paolo (1986) recruited two groups of participants, from Dawson County and Rusk County, she did not report any significant differences in inter-group inversion patterns. Thus, the present study used a single, state-wide grouping of Texas English speakers.



### 3.1.3 Materials

#### Test items

32 sets of test items were constructed, resulting in a total of 128 test sentences. The sets were divided evenly between items containing the double modals *might could* and *might should*. These are among the most commonly accepted double modal combinations as found in previous elicitation studies in SUSE (Butters, 1973; Coleman, 1975; Di Paolo et al., 1979; Hasty, 2011), minimizing any potential rating differences due to lexical frequency effects.

A test item set with the lexicalization *might could* is shown in (21), and a set with *might should* is shown in (22).

- (21) a. Billy is at the park with his mother. He says to her:  
b. i. “Might could I play on the monkey bars?” (*joint condition*)  
ii. “Might I could play on the monkey bars?” (*first condition*)  
iii. “Could I might play on the monkey bars?” (*second condition*)  
iv. “Could I play on the monkey bars?” (*single condition*)
- (22) a. Katie is confused by the many questions on a form. She says to her co-worker:  
b. i. “Might should I fill out this section?” (*joint condition*)  
ii. “Might I should fill out this section?” (*first condition*)  
iii. “Should I might fill out this section?” (*second condition*)  
iv. “Should I fill out this section?” (*single condition*)

In all items, the first sentence (a) was a context sentence, which introduced two characters and a particular setting. The second sentence (b) was the target *yes/no* question, reflecting one of the four levels of INVERTED MODAL. This was given as a line of dialogue spoken by one character to the other. Contextual dialogue was used in order to investigate non-standard forms that may be restricted to spoken registers (Henry, 2005; Hasty, 2014), despite the study’s reliance on written experimental materials.

#### Filler items

32 filler items appeared alongside the test items in the experiment. (23)–(26) exemplify the four types of fillers used in the experiment.

- (23) Eight acceptable declarative sentences with double modals (*DM-acceptable*)  
a. Julie is thirsty from playing in the yard. Her mother says:  
b. “I might could make us some iced tea.”
- (24) Eight unacceptable declarative sentences with double modals (*DM-unacceptable*)  
a. Modal-verb form mismatches

- i. Paul is looking for a particular brand of cereal at the store. A clerk says:
    - ii. “We might could ordered it in for you.”
  - b. Unacceptable modal combinations
    - i. Sally is excited and jumping on the bed. Her mother says:
    - ii. “You could might get hurt doing that.”
- (25) Eight acceptable *yes/no* questions (*Q-acceptable*)
- a. Peter and Sue have been waiting at the bus stop for an hour. Peter says:
  - b. “Has there been an accident somewhere?”
- (26) Eight unacceptable *yes/no* questions (*Q-unacceptable*)
- a. Ellen and Judy are waiting at the airport. Ellen says:
  - b. “Have our flight been delayed?”

Items containing the non-standard double modal forms *might could* and *might should* (23) were used alongside (standard) acceptable (25) and unacceptable (26) items to aid in identifying speakers whose judgments reflected their local dialects and not the prescriptive norms of Standard English (Henry, 2005).

Additionally, unacceptable double modal items (24) were of two types: sentences where a non-infinitive verb followed the modals (24a) and sentences where the modals themselves represented an unacceptable—or at least extremely rare—combination (24b) (Mishoe and Montgomery, 1994; Montgomery and Nagle, 1994; Fennell and Butters, 1996). These latter items tested the availability of *could might* and *should might* in participants’ local dialects.

### 3.1.4 Procedure

The test items for the experiment were divided among four lists in accordance with a Latin-Square design. Each list included exactly one condition from each test set, but an equal number of items from each condition overall. Thus, each list contained 32 unique test items (eight per condition). These materials were supplemented by eight practice items and 32 fillers, which were identical in every list; therefore, each participant saw 72 stimuli in total. The test items and fillers were presented in a pseudo-randomized order such that at least one filler intervened between each pair of test items.

The experiment was implemented as a web-based survey, created and hosted using the software Ibex Farm (Drummond, 2013). The experiment took approximately 15–20 minutes in total to complete.

At the beginning of the experiment, a participant read a description of the acceptability judgment task and was advised to rate each sentence according to its naturalness in his or her local dialect. A sentence was defined as *natural* if the participant “might utter it, or some sentence like it, to friends or family.” This instruction emphasized (i) what an individual speaker could say and (ii) informal, conversational usage, thus minimizing the

bias of Standard English prescriptivism in participants' judgments concerning the non-standard double modal construction (Henry, 2005; Hasty, 2014).

Each experimental trial was presented as a pair of sentences in the center of the participant's computer screen. A 7-point Likert scale appeared below the sentences as a set of boxes labelled 1–7 (additionally, 1 was labelled “Unnatural” and 7 was labelled “Natural”). The participant was asked to judge the acceptability of the target sentence by clicking one of the boxes with the mouse, or by typing an appropriate number on the keyboard. The software then recorded the participant's response as a scalar value (1–7). A screenshot of an experimental trial is provided in Figure 3.1.

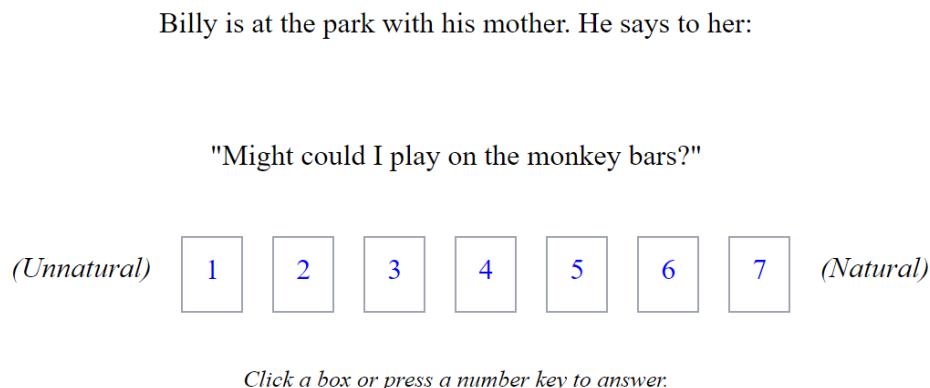


Figure 3.1: Screenshot of a test trial

## 3.2 Results

Acceptability ratings were initially  $z$ -score transformed (Schütze and Sprouse, 2013) to mitigate scale bias, such as that resulting from some participants using only a subset of the scale. However, for comparison, analyses were performed on the raw ratings as well as the transformed ratings, and similar results were obtained. For ease of interpretation, the results reported in this chapter reflect the raw acceptability ratings. All analyses were conducted in R (R Development Core Team, 2016).

### 3.2.1 Filler items

The filler items were designed to identify participants who were not making judgments on the basis of prescriptive norms, but whose judgments rather reflected an acceptance of the non-standard double modal construction. A participant was considered to accept double modals if his or her mean  $z$ -score rating for the eight acceptable declarative sentences containing double modals (*DM-acceptable*) was greater than or equal to 0. That is, the participant judged such items to have above-average acceptability.

By the above criterion, 108 participants recognizably accepted double modals in their local dialects. Of this subset, 44 were from Kentucky, 27 were from Tennessee, and 37 were from Texas. Further analyses were conducted on the data from this subset of participants. Figure 3.2 gives the mean (raw) acceptability rating for each filler type in the experiment for all 247 participants. Figure 3.3 gives the mean rating for each filler type among the subset of participants who accepted the double modal construction in declarative sentences.

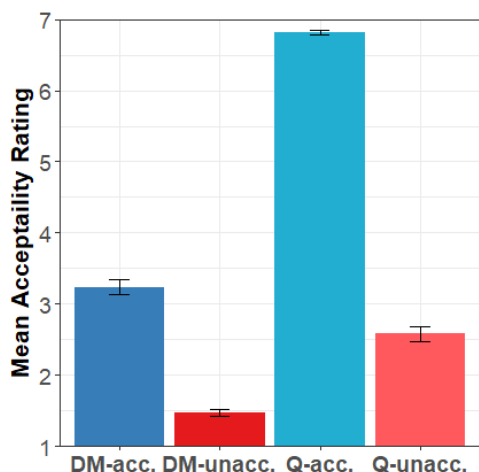


Figure 3.2: Mean rating of filler items  
(247 participants)

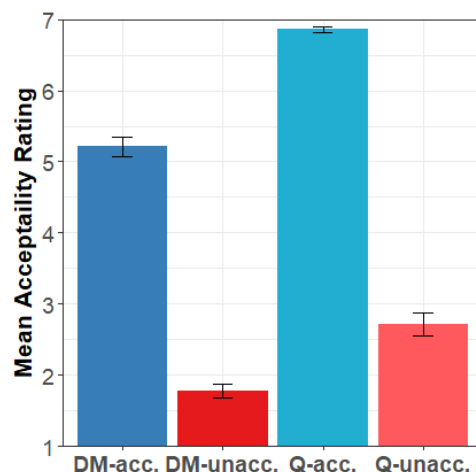


Figure 3.3: Mean rating of filler items  
(108 participants)

This subset of participants found declarative sentences containing *might could* and *might should* in *DM-acceptable* to be at least marginally acceptable (mean = 5.21, SE = 0.07). Nevertheless, ratings for *DM-acceptable* were degraded as compared to the Standard English items in *Q-acceptable* (mean = 6.86, SE = 0.02). This is likely a reflection of the dialectal status of the double modal construction (Hasty, 2012a).

The fillers additionally included four items with unacceptable/rare modal combinations and four items with double modal-verb form mismatches (*DM-unacceptable*). Figure 3.4 gives the mean rating for both *DM-unacceptable* subtypes among the subset of participants who accepted double modals. Among these participants, these items patterned similarly. Overall, items containing *could might* and *should might* (mean = 1.66, SE = 0.07) were rated slightly lower than items with modal-verb mismatches (mean = 1.91, SE = 0.08); this trend was reflected in the regional data from Kentucky, Tennessee, and Texas. These results indicate that for these participants, while *might could* and *might should* are readily available in the grammar, *could might* and *should might* are not. Hence, in the present analysis, *might* can always be interpreted as a first-place modal, and *could* and *should* can always be interpreted as second-place modals.

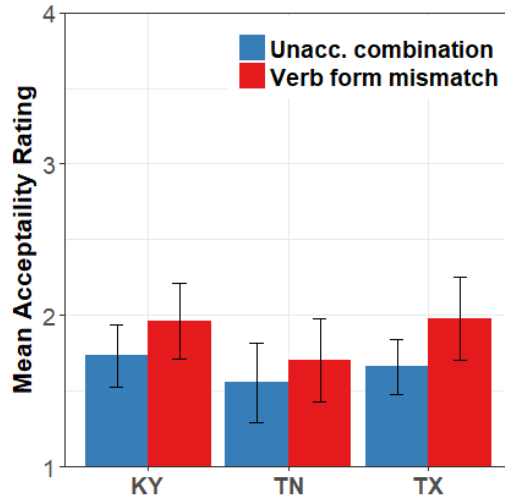


Figure 3.4: Mean rating of unacceptable double modal filler items

### 3.2.2 Test items

Analyses were carried out on the test data from the 108 participants who accepted the double modal construction. Among these participants, the *single* control condition was consistently rated high (mean = 6.85, SE = 0.021), and was excluded from subsequent analyses. Figure 3.5 gives the mean acceptability rating for the remaining three levels of INVERTED MODAL in each region.

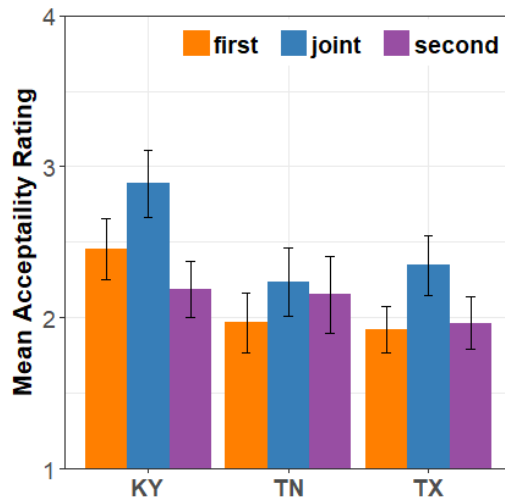


Figure 3.5: Mean rating of test items

To compare acceptability ratings for *joint* inversion against those for *first* and *second* inversion, a linear mixed-effects model (Bates et al., 2015) was fit with INVERTED MODAL

and REGION as fixed factors, and item and participant as random factors. Likelihood ratio tests revealed a main effect of INVERTED MODAL ( $\chi^2(2) = 55.53, p < .001$ ), but no significant effect of REGION ( $\chi^2(2) = 3.32, p = .19$ ). Overall, across the three regions, *joint* was rated significantly higher than *first* (est. = 0.37, SE = 0.06,  $t = 5.68, p < .001$ ); *joint* was also rated significantly higher than *second* (est. = 0.39, SE = 0.07,  $t = 6.01, p < .001$ ). There was a significant interaction between INVERTED MODAL and REGION ( $\chi^2(4) = 17.04, p < .01$ ). While *joint* was rated higher than *first* in all three regions, and *joint* was rated higher than *second* in Kentucky and Texas, *joint* and *second* were rated similarly in Tennessee.

The regional data were considered separately in three linear mixed-effects models fit with INVERTED MODAL as a fixed factor, and item and participant as random factors. In Kentucky, *joint* was rated higher than *first* (est. = 0.43, SE = 0.11,  $t = 3.99, p < .001$ ); *joint* was also rated higher than *second* (est. = 0.70, SE = 0.11,  $t = 6.57, p < .001$ ). A planned comparison of *first* and *second* indicated that *first* was rated higher (est. = 0.27, SE = 0.10,  $t = 2.74, p < .01$ ). In Tennessee, *joint* was rated higher than *first* (est. = 0.25, SE = 0.12,  $t = 2.04, p < .05$ ), but there was no significant difference between *joint* and *second* ( $p = .53$ ). A planned comparison did not reveal any significant difference between *first* and *second* either ( $p = .13$ ). In Texas, *joint* was rated higher than *first* (est. = 0.43, SE = 0.10,  $t = 4.14, p < .001$ ), and *joint* was rated higher than *second* (est. = 0.38, SE = 0.10,  $t = 3.72, p < .001$ ), but a planned comparison did not reveal any significant difference between *first* and *second* ( $p = .63$ ).

Given the marginal ratings for the test items in general, planned comparisons were performed for *joint* and *first* against the filler condition *DM-unacceptable*. A linear mixed-effects model was fit with CONDITION (*joint*, *first*, *DM-unacceptable*) and REGION as fixed factors, and item and participant as random factors. Overall, *joint* was rated significantly higher than *DM-unacceptable* (est. = 0.73, SE = 0.22,  $t = 3.32, p < .01$ ); however, ratings for *first* and *DM-unacceptable* were not significantly different ( $p = .13$ ).

Individual regional models were also constructed with CONDITION as a fixed factor, and item and participant as random factors. In Kentucky, *joint* was rated higher than *DM-unacceptable* (est. = 1.05, SE = 0.25,  $t = 4.20, p < .05$ ), but there was no significant difference between *first* and *DM-unacceptable* ( $p = .07$ ).<sup>5</sup> In Tennessee, *joint* was rated marginally higher than *DM-unacceptable*, but this difference was not significant ( $p = .08$ ); ratings for *first* and *DM-unacceptable* were not significantly different ( $p = .22$ ). In Texas, *joint* was rated higher than *DM-unacceptable* (est. = 0.53, SE = 0.11,  $t = 4.98, p < .001$ ), but ratings for *first* and *DM-unacceptable* were not significantly different ( $p = .34$ ). Figure 3.6 gives the mean rating of *joint*, *first*, and *DM-unacceptable* in each region.

<sup>5</sup>In Kentucky, *first* was rated marginally higher overall. However, during planned comparisons, it was found that two older (50+) Kentucky English participants were outliers who did not rate *joint* significantly different from *first* ( $p = .77$ ). After removal of these two participants from the regional model, the difference between *first* and *DM-unacceptable* was not significant ( $p = .13$ ).

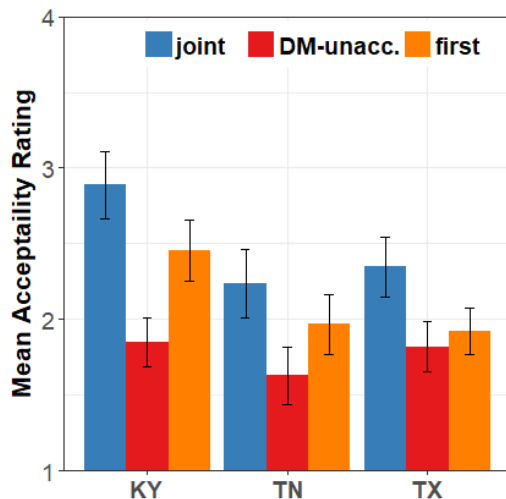


Figure 3.6: Mean rating of *joint*, *first*, and unacceptable double modal filler items

### 3.3 Discussion

The results of this experiment demonstrate that for at least a subset of SUSE speakers, inversion of a double modal construction in a *yes/no* question is at least marginally acceptable. Overall, and within each region assessed, participants rated joint subject-auxiliary inversion of a double modal significantly higher than inversion of a first modal. Since previous elicitation studies suggest that first modal inversion is unacceptable in SUSE (see Chapter 2), this result suggests that joint inversion, by contrast, is at least marginally acceptable in SUSE. Moreover, the results of planned comparisons showed that overall, and within each region, ratings for first modal inversion items and for unacceptable double modal filler items were not significantly different. By contrast, at least in Kentucky and in Texas, participants rated joint inversion items significantly higher than the unacceptable fillers. Although the difference between these conditions was only marginally significant in Tennessee, participants in this region still rated joint inversion items significantly higher than first modal inversion items. These findings further suggest that joint inversion is acceptable in SUSE.

Although joint inversion items were preferred as compared to first modal inversion items in all three regions in the experiment, the relation between joint and second modal inversion acceptability ratings varied by region. In Kentucky and Texas, joint inversion was rated significantly higher than second modal inversion. However, no significant difference between these experimental conditions was found in Tennessee. These results suggest that, while joint inversion is preferred in Kentucky English and Texas English, joint and second modal inversion are equally available in Tennessee English.

The relationship between first and second modal inversion ratings also varied by region. While these conditions were not found to be significantly different in Tennessee and Texas,

first modal inversion was rated significantly higher than second modal inversion in Kentucky. Since the acceptability judgment task in this experiment investigated the relative sizes of differences, rather than qualitative differences in acceptability (Schütze and Sprouse, 2013), it is uncertain whether these results indicate some qualitative distinction in the status of first modal inversion in Kentucky English. It may be the case that first modal inversion is (at least marginally) acceptable for speakers of this dialect. Certain empirical facts challenge this hypothesis, however. First, in the present experiment, ratings for first modal inversion and unacceptable double modal filler items were not found to be significantly different in Kentucky: such a difference would be expected if first modal inversion is a generally accepted pattern. Second, to date, no elicitation study has found first modal inversion to be generally acceptable in any dialect of SUSE.<sup>6</sup> Therefore, it is unlikely that first modal inversion is generally possible in Kentucky English.

The results of this experiment can be compared to those of the large-scale elicitation studies reviewed in Chapter 2: Di Paolo et al. 1979, Di Paolo 1986, and Hasty 2012a. First, in Texas English, Di Paolo et al. (1979) observe that, in a sentence completion task, their participants tended to add an additional modal in a fronted position; they thus conclude that joint inversion is acceptable in Texas English. This experiment supports this claim for Kentucky English and Tennessee English as well as for Texas English.

Next, Di Paolo (1986) reports a sentence imitation task study in which Texas English participants preferred to invert a second modal in forming questions with *might could* but exhibited no dominant preference for either joint or second modal inversion with *might should*. While the present experiment did not address lexical differences between modal combinations, the results suggest that Texas English speakers prefer joint inversion overall. This divergence is possibly due to methodology. Since the order of alternative question formulations in Di Paolo 1986 was not randomized, for *might could* items, participants most often heard second modal inversion last. Thus, a serial position effect (Colman, 2009) might have biased participants toward selecting this pattern for *might could*.

Sociolinguistic factors are another possible source of discrepancy. Di Paolo (1986) restricted her sample to members of long-time, relatively non-mobile families from Dawson County (West Texas) and Rusk County (East Texas). In contrast, the participants in this experiment were recruited from the University of Texas at Austin community, whose home counties were distributed throughout the state: the regions with the greatest representation were the Upper Gulf Coast (24.3%), North Texas (21.6%), and Central Texas (18.9%). Thus, the results may reflect dialectal differences between geographic regions of Texas. They may also reflect age or generational differences: Di Paolo (1986) considered three generations of

<sup>6</sup>To the author's knowledge, double modal question-formation strategies have not been qualitatively assessed in Kentucky English, however.



speakers at the time of her study, whereas the majority of Texas English speakers in this experiment were between ages 30 and 50 (54.1% were aged 30–39; 21.6% were aged 40–49).

To investigate these possibilities, separate linear mixed-effects models of the Texas test data were constructed with INVERTED MODAL and either GEOGRAPHIC REGION or AGE RANGE as fixed factors, and item and participant as random factors. Likelihood ratio tests found no significant effect of GEOGRAPHIC REGION ( $\chi^2(6) = 4.13$ ,  $p = .66$ ); there was no interaction, either ( $\chi^2(12) = 16.60$ ,  $p = .17$ ). By contrast, while there was no main effect of AGE RANGE ( $\chi^2(2) = 0.20$ ,  $p = .90$ ), there was an interaction ( $\chi^2(4) = 14.33$ ,  $p < .01$ ): for older (60+) speakers, *joint* and *second* ratings were not significantly different ( $p = .20$ ). The results from this group may reflect Di Paolo’s (1986) earlier observation that both joint and second modal inversion are (at least marginally) available in Texas English; if so, the tendency of younger speakers to prefer joint inversion in the present study may indicate a syntactic change in progress. This hypothesis might be tested in a follow-up study by consulting with larger samples of Texas English speakers from each age group.

Finally, Hasty (2012a) used a respondent-generated question formation task and a binary forced-choice task with Tennessee English speakers. Both tasks revealed a preference for second modal inversion, whereas the present experiment found no significant difference in acceptability ratings between joint and second modal inversion for Tennessee participants. Regional differences may have impacted these results. While Hasty (2012a) recruited speakers in the Tri-Cities area (Eastern Tennessee), only 33.3% of the Tennessee English speakers in this experiment were born and raised in Eastern Tennessee; the largest group were from Middle Tennessee (48.1%). Similarly, participant age may have affected the results: while the participants in Hasty 2012a were equally distributed by age range (19–29, 30–59, 60+), the majority of Tennessee English speakers in this experiment were under age 40 (63.0% were aged 30–39; 22.2% were aged 20–29).

To explore these potential effects, linear mixed-effects models of the Tennessee test data were constructed as above, with either GEOGRAPHIC REGION or AGE RANGE defined as a fixed factor. Likelihood ratio tests found a main effect of GEOGRAPHIC REGION ( $\chi^2(3) = 9.35$ ,  $p < .05$ ) and an interaction ( $\chi^2(6) = 14.91$ ,  $p < .05$ ): in Eastern Tennessee, in contrast to the other areas, *second* was rated slightly higher than *joint*, although this difference was not statistically significant ( $p = .13$ ). The results from this area may reflect the preference for second modal inversion that Hasty (2012a) previously observed in Eastern Tennessee. Consequently, it may be that there are true regional differences in inversion patterns within the state, and that different areas exhibit either the exclusive availability of second modal inversion or the availability of both joint and second modal inversion. A follow-up study with larger samples of speakers from each intra-state region might test this hypothesis. There was no significant effect of AGE RANGE ( $\chi^2(2) = 1.25$ ,  $p = .53$ ) and no interaction ( $\chi^2(4) = 4.67$ ,  $p = .32$ ).

The results of this experiment provide a means of evaluating theoretical approaches to the SUSE double modal construction. As reviewed in Chapter 2, previous analyses predict the availability of either joint inversion (Di Paolo, 1989), second modal inversion (Labov, 1972; Nagle, 2003; Close, 2004; Hasty, 2012b), or both joint and second modal inversion (Boertien, 1986; Battistella, 1995). Notably, none of these analyses predict first modal inversion to be possible: the results of this experiment support this hypothesis for Kentucky, Tennessee, and Texas Englishes. Furthermore, the results show that joint inversion is at least marginally acceptable in some regional variants of SUSE; however, second modal inversion is also acceptable, at least in Tennessee English. Thus, the restrictions of the previous analyses cannot be generalized across SUSE. Instead, an adequate theoretical analysis of the SUSE double modal construction must account for regional variations in the relative acceptability of joint and second modal inversion.

### 3.4 Summary

This experiment investigated the relative acceptability of double modal inversion patterns in questions in SUSE. In a web-based acceptability judgment task study, it was found that participants generally preferred joint subject-auxiliary inversion of double modals, as compared to first and second modal inversion. Moreover, judgments were found to vary by region: in Kentucky and Texas, participants demonstrated a significant preference for joint inversion overall, whereas in Tennessee, there was no significant preference for joint inversion as compared to second modal inversion.

The findings in this experiment suggest that, contrary to its marginal status in the literature, joint inversion of double modals is acceptable (and perhaps even preferred) in SUSE. However, at least in Tennessee, inversion of the second modal is also viable as a means of forming questions with the double modal construction. This observed regional variation cannot be immediately reconciled with previous theoretical analyses of the SUSE double modal construction, which predict the exclusive availability of joint, second modal, or both joint and second modal inversion. The next chapter advances a potential account of these facts in a TAG-based syntactic framework.

## Chapter 4

# Analysis

Previous analyses of the SUSE double modal construction cannot fully account for the inversion patterns reported in Chapter 3. As reviewed in Chapter 2, such analyses predict the availability of joint inversion, second modal inversion, or both; however, no single approach can explain the observed preference for joint inversion in some dialects (Kentucky English, Texas English) while maintaining the additional availability of second modal inversion in another (Tennessee English).

This chapter develops an alternative TAG-based model of double modals to account for the experimental results. Under this approach, first-place modals are introduced via separate auxiliary trees that adjoin to the main clausal elementary tree. Constraints on adjoining are shown to account for the observed regional variations in inversion patterns.

This chapter is organized as follows. Section 4.1 briefly outlines the TAG formalism as applied to natural language syntax. Section 4.2 motivates an analysis of first-place modals as auxiliary trees, and Section 4.3 treats the inversion data. Section 4.4 outlines extensions to other complex phenomena: higher-order combinations of modals and double modals with intervening negation or perfect auxiliaries. A summary is given in Section 4.5.

### 4.1 Introduction to TAG

The TAG formalism is first defined in Joshi et al. 1975 as an explicit, mathematically restrictive system for structural composition. In this system, the elementary objects are elementary trees, which—through the TAG operations of substitution and adjoining—can be combined into larger structures. Joshi (1985) and Kroch and Joshi (1985) adapt the TAG formalism to the analysis of natural language syntax.

In a TAG-based linguistic theory, the elementary objects are lexicalized trees, each representing the extended projection of a single lexical head, which is termed the *anchor*. The anchor is a terminal symbol on the frontier of the elementary tree (i.e. a terminal leaf node). The frontier may include other non-terminal and terminal symbols, subject to the Condition on Elementary Tree Minimality (CETM):

(27) **Condition on Elementary Tree Minimality:**

The syntactic heads in an elementary tree and their projections must form an extended projection of a single lexical head. (Frank, 2002, p.54)

In compliance with the CETM, syntactic/semantic arguments of the lexical anchor are only permitted as frontier non-terminal “slots” in the elementary tree. According to Frank (2002), functional heads are permitted as frontier terminals only if they form the extended projection of the lexical anchor as in Grimshaw 1991. For example, an elementary tree anchored by a noun may encapsulate a D and project to DP; an elementary tree anchored by a verb may include auxiliaries, T, or C as frontier terminals and project to either TP or CP. No other symbols, such as adjuncts, may appear in the frontier. Elementary trees in TAG thus possess an Extended Domain of Locality (Kroch and Joshi, 1985).

Well-formed elementary trees are likewise subject to the fundamental TAG hypothesis:

(28) **The fundamental TAG hypothesis:**

Every syntactic dependency is expressed locally within a single elementary tree. (Frank, 2002, p.22)

In accordance with this hypothesis, grammatical dependencies, such as those formed by transformational movement, may only obtain between nodes in the same elementary tree. In TAG, therefore, movement must occur within—not across—elementary trees.

There are two types of elementary trees: initial trees and auxiliary trees. Initial trees (conventionally denoted with  $\alpha$ ) represent non-recursive structures, such as nominal phrases and simple clauses. Two examples of initial trees are given in Figure 4.1: ( $\alpha$ the\_budgerigar) is anchored by the noun *budgerigar*, and ( $\alpha$ could\_sing) is anchored by the verb *sing*.

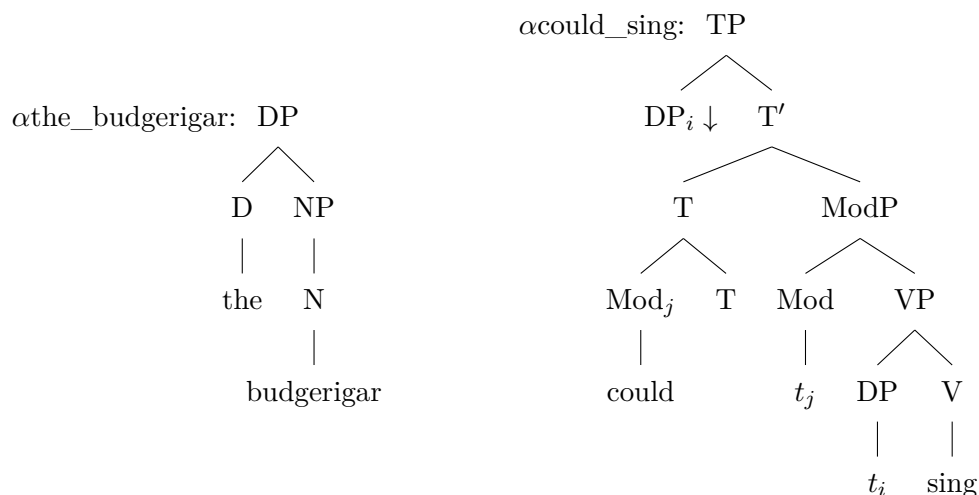


Figure 4.1: Initial trees in TAG

Note that in ( $\alpha$ could\_sing), the modal *could* is not base-generated in T (Ouhalla, 1991; Kayne, 2000), but rather raises to T from a lower projection; following Ouhalla (1991),

the modal originates as the head of a modal phrase (ModP).<sup>1</sup> ( $\alpha$ could\_sing) also has a DP argument slot for a subject (marked with  $\downarrow$ ), which, in accordance with the VP-internal Subject Hypothesis (Koopman and Sportiche, 1991), has raised from [Spec, VP] to [Spec, TP]. Subsequent examples omit Mod-to-T and subject raising for brevity, but such movements are assumed to occur within all applicable clausal elementary trees, following (28).

Auxiliary trees (conventionally denoted with  $\beta$ ) introduce recursion and are subject to the additional constraint that the label of the root node must match that of a non-terminal frontier node, termed the *foot node* (marked with \*). Two examples of auxiliary trees are given in Figure 4.2. ( $\beta$ prettily) is anchored by the adverb *prettily*, and ( $\beta$ perhaps) is anchored by the adverb *perhaps*.

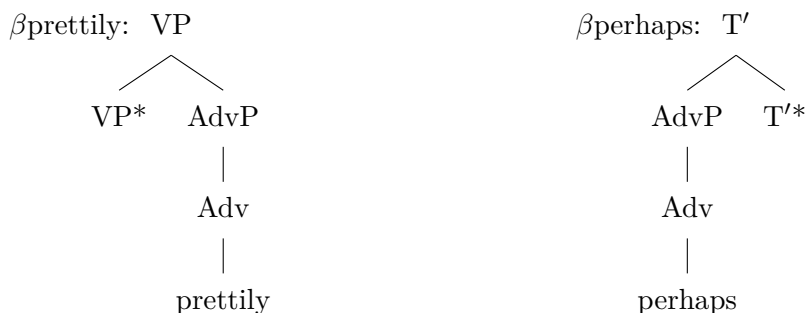


Figure 4.2: Auxiliary trees in TAG

The structures in Figure 4.2 are more precisely termed *modifier auxiliary trees* as in both cases, the modifying phrase is the sister of the foot node and the daughter of the root node (Frank et al., 2000). Note that ( $\beta$ prettily) and ( $\beta$ perhaps) are well-formed with respect to the CETM: both trees represent the extended projections of single (Adv) heads.<sup>2</sup> Furthermore, following Frank (2002), the VP/T' foot nodes in these trees can be considered argument slots of their respective anchors since  $\theta$ -identification obtains between them (Higginbotham, 1985).

A TAG derivation consists of the application of two composition operations, substitution and adjoining, to a set of well-formed elementary trees.<sup>3</sup> For an elementary tree  $\alpha_1$  to substitute into another elementary tree  $\alpha_2$ , the root  $N$  of  $\alpha_1$  must rewrite some non-terminal

<sup>1</sup>Following Frank (2002), this work assumes that modals and auxiliaries are base-generated as functional heads in the same elementary tree as the main verb. In other words, for each English verb, there exists a precompiled set of elementary trees that encodes all possible combinations with (single) modals and/or auxiliaries. An alternative approach is to adjoin all modals and auxiliaries to the verbal elementary tree: see, e.g., XTAG Research Group 2001.

<sup>2</sup>Note that if the root VP/T' nodes in ( $\beta$ prettily) and ( $\beta$ perhaps) represented the projections of V/T heads, these trees would violate the CETM: Adv and V/T cannot belong to the same extended projection.

<sup>3</sup>The well-formedness of elementary trees is language- and dialect-dependent. For example, structures that are considered well-formed in some dialects of English may not be available in others.

frontier node in  $\alpha_2$  which is both identically-labelled to  $N$  and marked for substitution ( $\downarrow$ ). For example, in Figure 4.3, ( $\alpha_{\text{the\_budgerigar}}$ ) substitutes into ( $\alpha_{\text{could\_sing}}$ ) at DP to yield the simple sentence *The budgerigar could sing*.

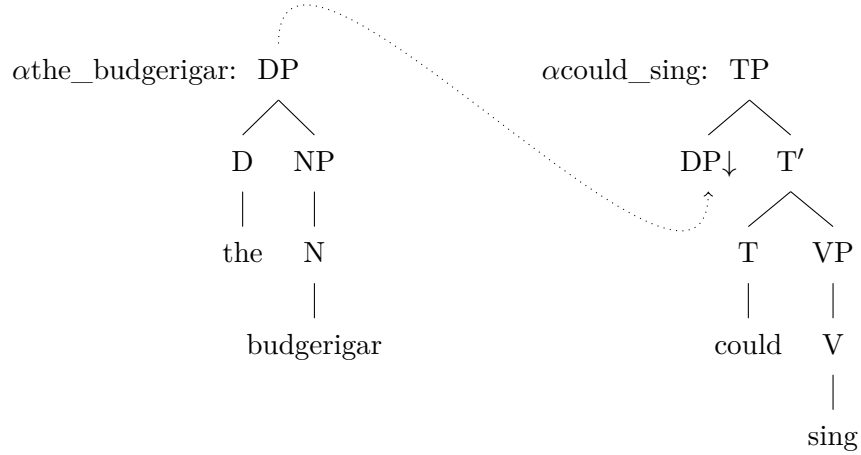


Figure 4.3: Substitution in TAG

If  $\beta_1$  is an auxiliary tree and its root and foot nodes are labelled with the non-terminal  $N$ ,  $\beta_1$  may adjoin to another elementary tree  $\alpha_3$  by rewriting some non-terminal in  $\alpha_3$  labelled  $N$ . For example, in Figure 4.4, ( $\beta_{\text{prettily}}$ ) adjoins to ( $\alpha_{\text{could\_sing}}$ ) at VP to yield the predicate *could sing prettily*.

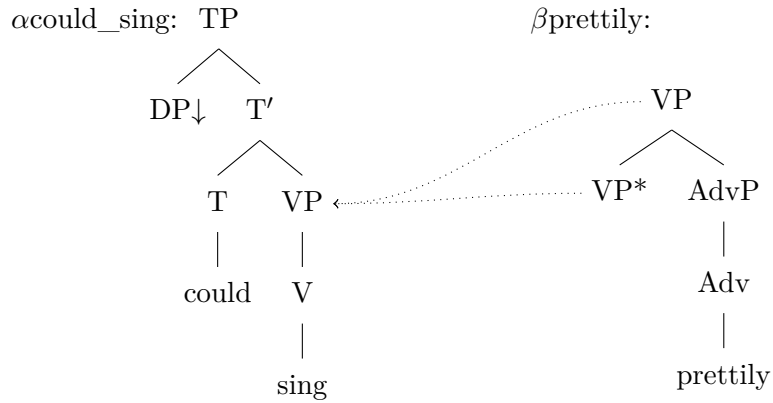


Figure 4.4: Adjoining in TAG

While adjoining modifier auxiliary trees in the manner shown in Figure 4.4 resembles adjunction (Lebeaux, 1988), the TAG adjoining operation not only incorporates modification but more generally introduces recursive structures, such as raising verbs and verbs that take clausal complements (Frank, 2002). In this way, adjoining allows local dependencies

within an elementary tree to become “stretched,” creating unbounded relations across any number of intervening trees.

A TAG derivation yields two structures: a derived tree (conventionally denoted with  $\gamma$ ) and a derivation structure (denoted with  $\delta$ ). The derived tree represents surface constituency, as in a conventional phrase structure tree. The derivation structure reflects dependencies between elementary trees created through applications of the TAG operations. Every node in the derivation structure represents an elementary tree; each child has either adjoined to or substituted into its parent.<sup>4</sup> Figure 4.5 provides a derived tree (left) and a derivation structure (right) for *The budgerigar could sing prettily*. To generate the desired sentence,  $(\alpha\text{the\_budgerigar})$  substitutes into  $(\alpha\text{could\_sing})$  at DP, and  $(\beta\text{prettily})$  adjoins to  $(\alpha\text{could\_sing})$  at VP.

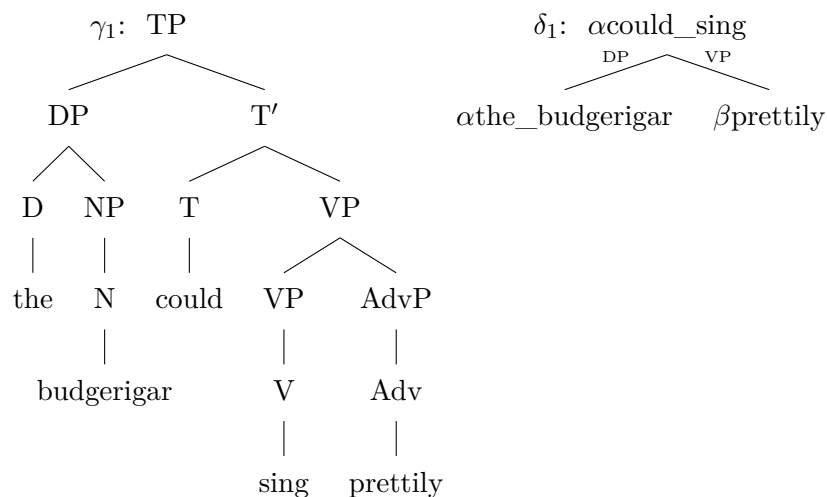


Figure 4.5: Derived tree and derivation structure in TAG

Since the seminal work of Joshi et al. (1975), Joshi (1985), and Kroch and Joshi (1985), TAG-based analyses have been developed for various complex syntactic phenomena, such as extraposition (Kroch and Joshi, 1987), clitic climbing (Bleam, 2000), island effects and unbounded *wh*-movement (Frank, 2002, 2006), subject-to-subject raising (Frank, 2002; Storoshenko, 2006), *it*-clefts (Han and Hedberg, 2008), and clausal coordination with shared arguments (Sarkar and Joshi, 1996; Han et al., 2018). The remainder of this chapter outlines a novel, TAG-based analysis of the SUSE double modal construction.

<sup>4</sup>Parent-child links in the derivation structure are commonly annotated with the location in the parent tree that was targeted by a TAG operation, recorded as either a Gorn tree address or a node label. Node labels are used in this chapter.

## 4.2 The SUSE double modal construction in TAG

In a TAG-based syntactic framework, the CETM requires that the heads in a clausal elementary tree form a single extended projection. Since conventional accounts of Standard English clause structure contain at most one projection for a modal, the SUSE double modal construction is an apparent violation of the CETM. Consequently, a TAG-based analysis must address the incorporation of a further modal in SUSE. One potential solution is to postulate an additional functional projection for one of the modals, as in Hasty’s (2012b) merged MP analysis (see Chapter 2). Another approach is to generate the modals in separate elementary trees: in particular, the present proposal is that first-place modals are introduced via modifier auxiliary trees, which adjoin to the main clausal projection.

The generation of first- and second-place modals in distinct elementary trees is motivated by the “opacity” of first-place modals, but not second-place modals, with respect to local dependencies within the clausal elementary tree.

In a Standard English clause, each auxiliary determines the form of the following verb: modals must be followed by bare infinitives. In the SUSE double modal construction, however, the first modal does not affect the form of the second modal. The standard verb form-selection relation is unavailable since English modals do not have an infinitive form, but rather inflect for (morphosyntactic) tense (Adger, 2003).<sup>5</sup> Moreover, contrary to the claim of Di Paolo (1989), double modals need not agree in tense. Tense-mismatched combinations such as *may could* (present-past) and *might can* (past-present) have been attested in naturalistic studies of SUSE (Coleman, 1975; Feagin, 1979; Mishoe and Montgomery, 1994) and judged acceptable by some speakers in elicitation studies (Coleman, 1975; Hasty, 2011). Two naturalistic examples from South Carolina are given in (29).

- (29) a. We may could look at it a different way.  
b. I think I might can do something with it. (Elsman, 2007)

Additionally, in English, an embedded clausal complement following a past tense matrix clause exhibits Sequence of Tense (SoT) effects (Eng, 1987). An embedded past tense clause is ambiguous between readings with a simultaneous evaluation time and a shifted evaluation time (i.e. prior to the evaluation time of the matrix clause); an embedded present tense clause yields only a simultaneous reading. For example, in (30a), when the clausal complement of the past tense matrix verb is also in the past tense, two readings are available: under the simultaneous reading, Bill’s sickness coincides with the time of John’s statement; under the shifted reading, Bill’s sickness occurred prior to John’s statement. In (30b), when the clausal complement is in the present tense, only the former reading is available.

<sup>5</sup>Following Adger (2003), English modals are subdivided into syntactic past and present tense forms. Note that a modal’s syntactic tense is independent from its temporal semantics, which are beyond the scope of the present discussion.



- (30) a. John said that Bill was sick.  
 b. John said that Bill is sick. (Hasty, 2012b, p.1725–1726)

A similar distinction arises with embedded modals. When the clausal complement of the past tense matrix verb includes the past tense modal *might* or *could*, as in (31a), two readings are again available. By contrast, when the clausal complement contains the present tense modal *may* or *can*, as in (31b), only a simultaneous reading is possible.

- (31) a. John said it might/could snow. (It hasn't yet/It did.)  
 b. John said it may/can snow. (It hasn't yet/#It did.)  
 (Hasty, 2012b, p.1726)

In SUSE, Hasty (2012b) demonstrates that in an embedded double modal construction, it is the second modal, not the first, which determines the tense of the clause and hence the available readings, as shown in (32).

- (32) a. John said it may/might could snow. (It hasn't yet/It did.)  
 b. John said it may/might can snow. (It hasn't yet/#It did.)  
 (Hasty, 2012b, p.1726–1727)

Furthermore, in a Standard English interrogative clause containing one or more auxiliary verbs, the highest of these is selected to undergo subject-auxiliary inversion. However, as outlined in Chapter 2, previous studies have found that inversion of the first modal in a SUSE double modal construction, as in (33a), is unacceptable. By contrast, at least some speakers of SUSE permit second modal inversion, as in (33b).

- (33) a. \* Might you could go to the store for me?  
 b. Could you might go to the store for me? (Hasty, 2012b, p.1718)

Finally, in Standard English, *do*-support applies to negative clauses containing no finite auxiliaries. Nevertheless, certain SUSE speakers allow first-place modals to co-occur with *do*-support, seemingly in place of a second modal. Naturalistic examples from the Carolinas are given in (34).<sup>6</sup>

- (34) a. There weren't no way to be sure; could be he may didn't want to come.  
 (Mishoe and Montgomery, 1994, p.12)  
 b. That must didn't hurt him cause he's still in the lead. (ibid., p.14)

In summary, first-place modals are distinct from second-place modals in that they do not engage in typical selection or movement relations within the clause. Following (28), in TAG, such dependencies may only obtain between nodes in a single elementary tree.

<sup>6</sup>By contrast, Di Paolo (1989) reports that the combination *might don't* was not accepted by any of her Texas English participants. The extent of modal + *do* forms in SUSE awaits further investigation.

Therefore, the inactivity of first-place modals in verb form-selection and SoT effects, the unacceptability of first modal inversion, and the inability of first-place modals to prevent *do*-support are naturally explained if first-place modals are base-generated outside of the main clausal elementary tree.

In a TAG-based analysis, first-place modals can be relegated to auxiliary trees, which may adjoin to a clausal elementary tree containing a second-place modal during a TAG derivation.<sup>7</sup> An auxiliary tree structure anchored by *might* is given in Figure 4.6; isomorphic auxiliary tree structures may exist in the grammar for other first-place modals, such as *may* and *must*, subject to regional and idiolectal variation.

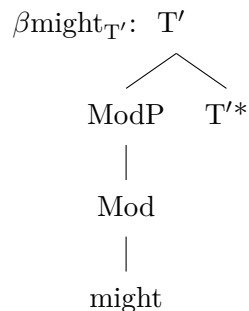


Figure 4.6: Auxiliary tree for first-place *might*

Note that  $(\beta\text{might}_{T'})$  satisfies the definition of a modifier auxiliary tree: a modifier phrase (i.e. ModP) is both the sister of the foot node and the daughter of the root node (Frank et al., 2000). The root and foot nodes in  $(\beta\text{might}_{T'})$  are non-maximal  $T'$  projections, similar to those of the adverbial  $(\beta\text{perhaps})$  in Section 4.1.

Since  $(\beta\text{might}_{T'})$  is recursive on  $T'$ , it may adjoin to a clausal elementary tree between the subject, located in [Spec, TP], and the second-place modal, located in T. For example, in Figure 4.7,  $(\beta\text{might}_{T'})$  adjoins to  $(\alpha\text{could\_sing})$  at  $T'$ . Figure 4.8 gives the derived tree and derivation structure after substitution of a second-person subject into  $(\alpha\text{could\_sing})$ .

Unlike the adverb *perhaps*, the distribution of first-place *might* is restricted to clauses that contain second-place modals. Moreover, while a wide range of second-place modals are attested in SUSE (Mishoe and Montgomery, 1994; Montgomery and Nagle, 1994; Fennell and Butters, 1996), not all SUSE speakers accept all possible double modal combinations.

<sup>7</sup>The relegation of the first-place modal to a separate tree is an apparent exception to Frank’s (2002) CETM, which requires each elementary tree to be anchored by a lexical head. Nevertheless, the present analysis is motivated by certain distributional facts, described above. Moreover, in SUSE, first-place modals such as *might* not only contribute the usual sense of epistemic possibility but also a sense of indirectness (Di Paolo, 1989): given their additional pragmatic content, it may be that first-place modals, in contrast to their functional, “pure modal” counterparts in the clausal hierarchy of projections, are lexical heads.

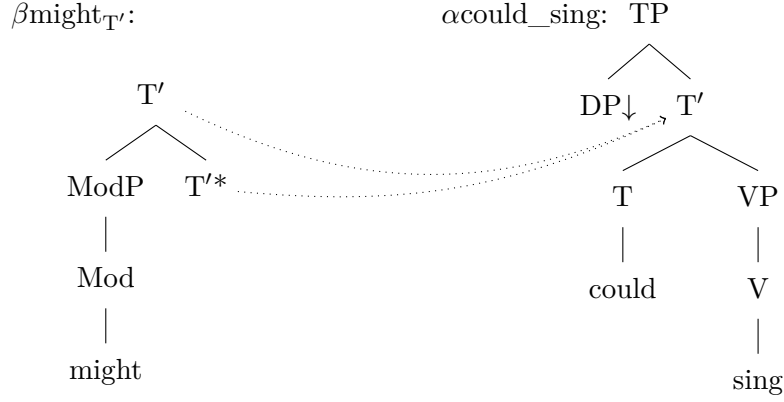


Figure 4.7: Adjoining first-place *might*

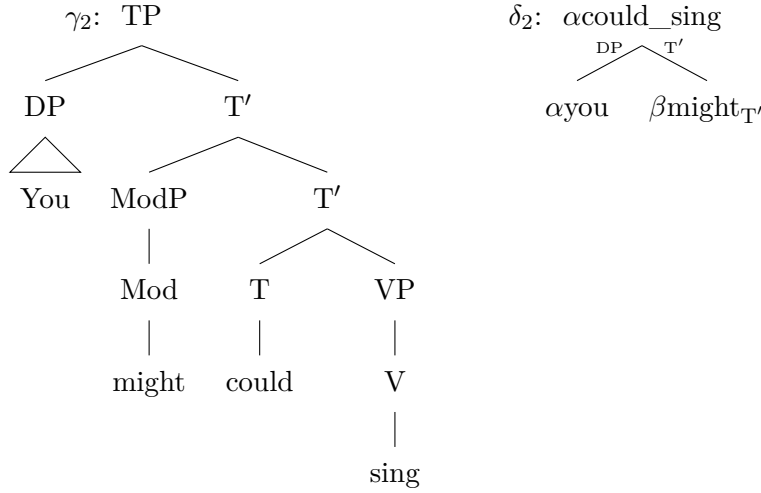


Figure 4.8: Derived tree and derivation structure for a double modal sentence

For these reasons, it is desirable to constrain the adjoining of  $(\beta\text{might}_{T'})$  to clausal elementary trees that encapsulate certain second-place modals, where the set  $S$  of appropriate second-place modals is defined by an individual's grammar.

In a TAG-based analysis, application of the TAG operations may be restricted by inter-elementary-tree feature unification. Vijay-Shanker and Joshi (1988) propose that nodes in an elementary tree are associated with feature sets: when one node rewrites another, their feature sets combine. At the end of a TAG derivation, the features on each node must unify in order for the derivation to converge. Any node bearing incompatible features will cause the derivation to crash.

In the present analysis,  $[+MM]$  is a lexical feature that is associated with all potential elements of a multiple-modal construction. As such,  $[+MM]$  is specified on all first-place and second-place modals that are available in a given SUSE speaker's grammar. The feature  $[-MM]$ , by contrast, is associated with all T heads that are not compatible with a multiple-

modal construction in a given speaker’s grammar: these may include, e.g., null T, infinitival *to*, and *might* when it appears in the extended projection of a clausal elementary tree.<sup>8</sup>

According to Frank (2002), lexical features may percolate freely within an extended projection. Thus, [+MM] is associated with the nodes of any auxiliary tree that contains a first-place modal as well as the nodes of any clausal elementary tree that contains a potential second-place modal; likewise, [−MM] is associated with the nodes of all other clausal elementary trees.

Figure 4.9 gives examples of elementary trees with [±MM] specification. In ( $\beta$ might<sub>T'</sub>), [+MM] has percolated to the root T', and so this auxiliary tree can only combine with a clausal elementary tree containing an appropriate, [+MM]-valued second-place modal during the course of a TAG derivation. Note that ( $\alpha$ could<sub>sing</sub>) is one such tree: when ( $\beta$ might<sub>T'</sub>) adjoins to ( $\alpha$ could<sub>sing</sub>) at T', the instances of [+MM] on this node unify successfully. By contrast, when ( $\beta$ might<sub>T'</sub>) adjoins to ( $\alpha$ to<sub>sing</sub>) at T', [+MM] and [−MM] cannot be unified; hence no derivation containing the combination *might to* is valid.<sup>9</sup>

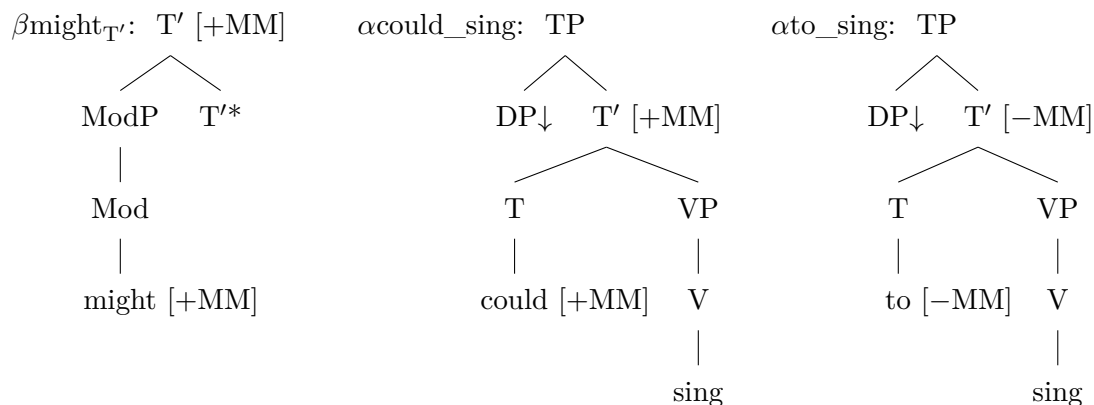


Figure 4.9: Elementary trees with [±MM] feature specification

This analysis can be extended to account for speakers who permit certain—but not all—potential combinations of the first-place and second-place modals that are available in their grammars. One avenue is to posit separate [±MM<sub>m</sub>] features for each first-place

<sup>8</sup>Double modals with second-place *might* are attested in the literature, but remain “highly suspicious” in terms of speaker judgments (Coleman, 1975). For example, Mishoe and Montgomery (1994) report only two instances of *could might*, one instance of *may might*, and one instance of *would might* in the Carolinas.

<sup>9</sup>This analysis also accounts for the status of combinations such as *could might* and *should might*, which have been reported to be extremely rare and/or unacceptable (Mishoe and Montgomery, 1994; Montgomery and Nagle, 1994; Fennell and Butters, 1996) and which were strongly rejected by participants in the acceptability judgment task study described in Chapter 3. First, since *could* and *should* are not typical first-place modals, no auxiliary tree structures are defined for these modals for most speakers; hence, neither can adjoin to a clausal elementary tree. Second, since *might* is not an expected second-place modal, it is specified as [−MM] in the main clausal elementary tree for most speakers: any attempt to adjoin a [+MM] first-place modal above *might* will therefore cause the derivation to crash.

modal *m*. For example, if a speaker accepts *might could*, *might should*, and *may could*, but not *may should*, then in his or her grammar *could* bears both  $[+MM_{\text{might}}]$  and  $[+MM_{\text{may}}]$ , but *should* bears  $[+MM_{\text{might}}]$  and  $[-MM_{\text{may}}]$ . In this way, a TAG-based analysis can account for the rarity of certain combinations, e.g. *may should*, which is attested only twice in Mishoe and Montgomery 1994.

The present TAG-based analysis bears certain similarities to the adverbial approach advocated by Battistella (1995) and others (see Chapter 2). Both approaches recognize that first-place modals are structurally distinct from typical modals: under the TAG-based analysis, first-place modals anchor T'-recursive auxiliary trees; under Battistella's (1995) account, these are T'-level adverbial modifiers. Nevertheless, use of the TAG adjoining operation as opposed to adverbial adjunction captures various constraints on the distribution of SUSE double modals.

In particular, under the TAG-based analysis, adjoining is limited by feature unification: first-place modals may only combine with  $[+MM]$ -valued elementary trees. This restricts adjoining to clausal elementary trees that contain licit second-place modals; combinations with, e.g., infinitival *to* are ruled out. Furthermore, since  $[\pm MM]$  specification on second-place modals can be defined on a lexical basis for individual speakers, rarer modal combinations such as *may should* may be selectively prohibited. By contrast, under the adverbial account, no explicit mechanism is given to constrain adjunction. While certain adverbs are restricted to co-occur with certain aspectual classes of verbs in English (e.g. adverbs indicating agentivity generally do not occur with stative eventualities (Rothstein, 2004)), it is unclear how this process obtains for first-place modals, which combine with a limited, idiosyncratic set of modal verbs. At present, the adverbial approach does not prevent a first-place modal from modifying a non-modal T head, such as *to*, nor does it address the rarity of certain modal combinations, such as *may should*.

### 4.3 Double modal inversion patterns in TAG

In the acceptability judgment task study reported in Chapter 3, it was found that SUSE participants generally accepted joint inversion of double modals in *yes/no* questions, as exemplified in (35).

- (35)     Might could you sing?

In a TAG-based analysis, questions containing joint inversion cannot be derived through transformational raising of both modals. Following (28), movement dependencies may only obtain between nodes base-generated in the same elementary tree. Thus, while a second-place modal (e.g. *could*) may undergo T-to-C movement within the main clausal elementary tree, a first-place modal (e.g. *might*)—which anchors a separate auxiliary tree—may not. Therefore, the “inverted” clause-initial position of *might* in (35) must result from adjoining.

This result can be obtained by the specification of an alternative auxiliary tree structure anchored by *might* that is recursive on  $C'$  instead of  $T'$ . Henceforth  $(\beta\text{might}_{C'[Q]})$ , given below in Figure 4.10, is distinguished from  $(\beta\text{might}_{T'})$ , which was given above in Figure 4.9.

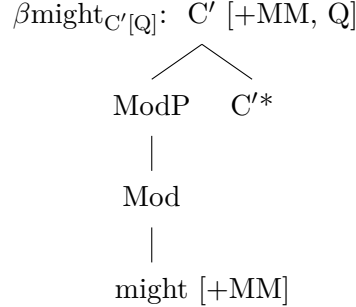


Figure 4.10: Auxiliary tree for first-place *might* (joint inversion)

Feature specification on the root of  $(\beta\text{might}_{C'[Q]})$  restricts this auxiliary tree’s potential for adjoining. Similar to  $(\beta\text{might}_{T'})$ ,  $(\beta\text{might}_{C'[Q]})$  can only adjoin to a clausal elementary tree containing a  $[+MM]$ -valued second-place modal.

Specification of  $[Q]$  further limits adjoining of  $(\beta\text{might}_{C'[Q]})$  to questions.<sup>10</sup> Following Adger (2003), in interrogative clauses,  $C$  bears  $[Q]$ , whereas in declarative clauses,  $C$  bears  $[\text{Decl}]$ . These features are incompatible:  $C$  cannot be simultaneously  $[Q, \text{Decl}]$ . Since lexical features percolate within an extended projection, if some node in a clausal elementary tree is valued  $[Q]$  (or  $[\text{Decl}]$ ), every node is valued as such.<sup>11</sup> Combination of  $(\beta\text{might}_{C'[Q]})$  with a declarative clausal elementary tree would therefore result in feature clash between  $[Q]$  and  $[\text{Decl}]$  within the derived tree, and the derivation would subsequently crash. As such, non-interrogative sentences with “inverted” first-place modals such as (36) are correctly ruled out.

(36)    \* Might you could sing. (intended as a declarative)

<sup>10</sup>In its present formulation, this analysis predicts that joint double modal inversion is restricted to questions and will not occur in, e.g., declaratives with negative inversion. The author is not aware of any studies to date that have considered the interaction of SUSE double modals and negative inversion, and so investigation of this hypothesis is left for future research. Nevertheless, if joint negative inversion is found to be acceptable in SUSE, the feature specification of  $(\beta\text{might}_{C'[Q]})$  might be adjusted to permit unification not only with  $[Q]$ -valued clauses but any clause exhibiting T-to-C movement.

<sup>11</sup>The present discussion is restricted to  $[Q]$ -valued root clauses. Embedded questions are also valued  $[Q]$ , but do not exhibit double modal inversion in SUSE:

(iii) Do you know where I might would find stuff like that? (Elsman, 2007)

To extend this analysis to cases such as (iii), one approach is to posit a separate clause-type feature for embedded clauses and an appropriately specified variant of  $(\beta\text{might}_{T'})$  (but not  $(\beta\text{might}_{C'})$ ). Alternatively, the clause-type distinction between variants of  $(\beta\text{might})$  might be more appropriately expressed in terms of whether or not a clause evidences T-to-C movement; see footnote 10.

To derive (35), a *yes/no* question with joint inversion,  $(\beta\text{might}_{C'[Q]})$  adjoins to the interrogative clausal elementary tree  $(\alpha Q\text{-could\_sing})$  at  $C'$ , as shown in Figure 4.11.<sup>12</sup> In the main clausal elementary tree,  $[+MM]$  percolates from *could* to  $C'$ ; similarly,  $[Q]$  percolates from  $C$  to  $C'$ . When  $(\beta\text{might}_{C'[Q]})$  adjoins at  $C'$ , these instances of  $[+MM]$  and  $[Q]$  unify. It remains for the DP subject to substitute into  $(\alpha Q\text{-could\_sing})$  for the derivation to converge. The resulting surface form exhibits joint inversion: *Might could you sing?*

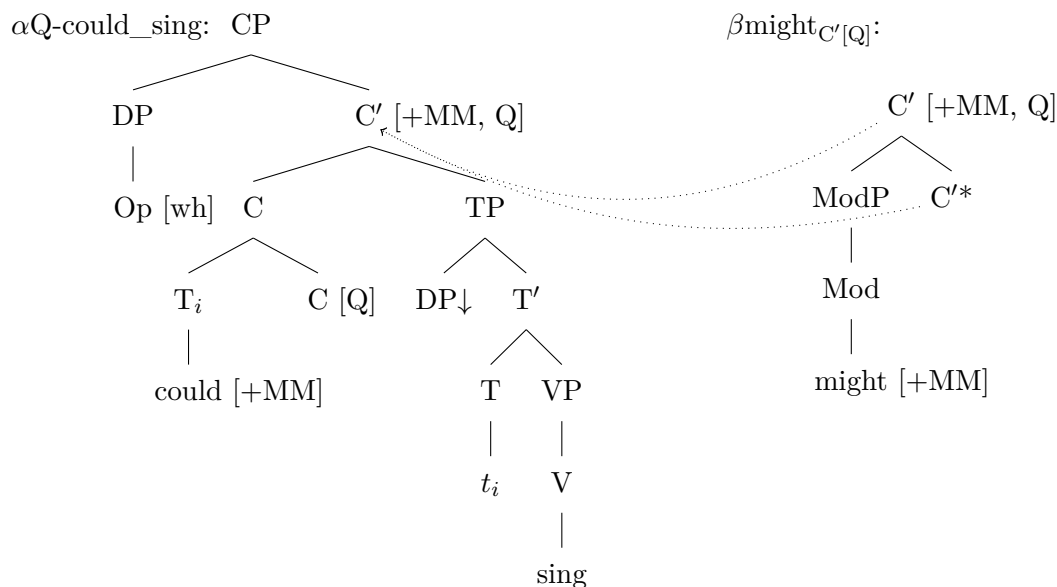


Figure 4.11: Adjoining first-place *might* in joint inversion

In the acceptability judgment task study reported in Chapter 3, it was found that Tennessee English participants accepted second modal inversion, as in (37), in addition to joint inversion.

(37) Could you might sing?

Unlike Tennessee English participants, Kentucky English and Texas English participants did not accept second modal inversion. It is therefore desirable for a TAG-based analysis to impose dialectal restrictions on the availability of second modal inversion.

This result can be achieved through feature unification. Note that  $(\beta\text{might}_{T'})$  is independently necessary in all three regional dialects to derive declarative double modal sentences (see Section 4.2). In Kentucky English and Texas English,  $(\beta\text{might}_{T'})$  may only occur with declarative clauses. As such, it can be assumed that the root of this auxiliary tree bears  $[\text{Decl}]$ ; henceforth, this structure is termed  $(\beta\text{might}_{T'[\text{Decl}]})$ . Since lexical features percolate throughout an extended projection, in an interrogative clausal elementary tree,  $C$ 's  $[Q]$  is

<sup>12</sup>Following Adger (2003),  $[\text{Spec}, \text{CP}]$  in a *yes/no* question is filled by a null operator, which is given here as  $\text{Op} [\text{wh}]$ .

also realized on  $T'$ . Adjoining  $(\beta\text{might}_{T'[\text{Decl}]})$  at  $T'$  would yield a clash between  $[Q]$  and  $[\text{Decl}]$ , and the derivation would crash. This is the desired result for Kentucky English and Texas English.

For Tennessee English, a variant structure  $(\beta\text{might}_{T'[Q]})$  is postulated, which can be used to derive *yes/no* questions with second modal inversion. For example, to derive (37),  $(\beta\text{might}_{T'[Q]})$  adjoins to  $(\alpha Q\text{-could\_sing})$  at  $T'$ , as illustrated in Figure 4.12. In  $(\alpha Q\text{-could\_sing})$ ,  $[+MM]$  percolates from *could* to  $T'$  and  $[Q]$  percolates from  $C$  to  $T'$ . When  $(\beta\text{might}_{T'[Q]})$  adjoins at  $T'$ , the instances of  $[+MM]$  and  $[Q]$  on this node unify. After substitution of a DP subject, the derivation converges, yielding a surface form with second modal inversion: *Could you might sing?*

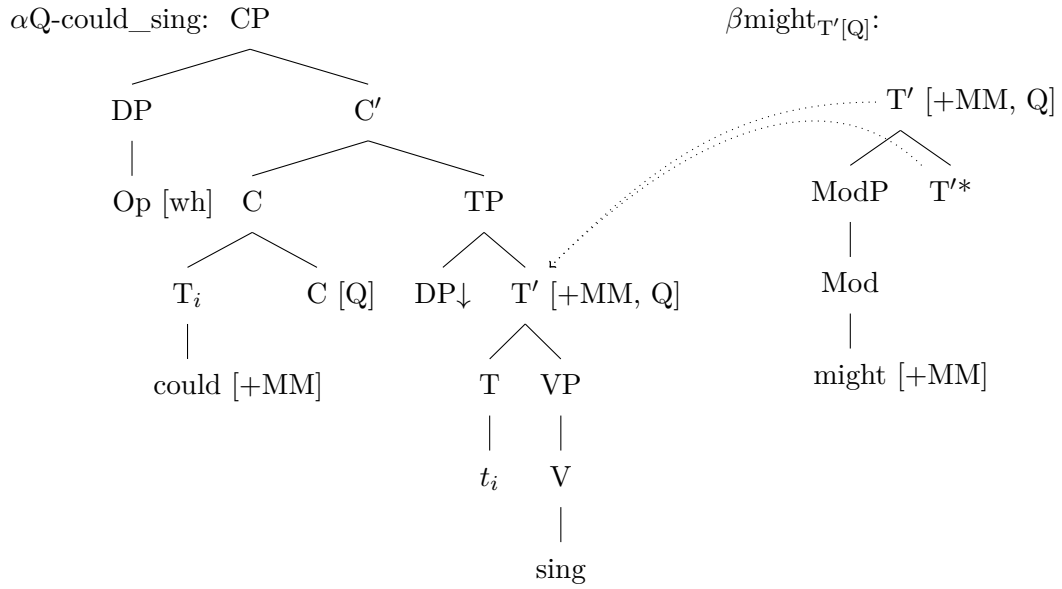


Figure 4.12: Adjoining first-place *might* in second modal inversion

One consequence of the present TAG-based analysis is that it disallows first modal inversion, as in (38).

(38) \*Might you could sing?

The clause-initial position of *might* in (38) requires  $(\beta\text{might}_{C'[Q]})$  to have adjoined to an interrogative clausal elementary tree, where  $C$  is valued  $[Q]$ . Note that  $[Q]$  is responsible for triggering T-to-C movement in main clauses (Adger, 2003). By (28), this movement must occur tree-locally; however, to obtain the surface order in (38), T-to-C raising of *could* must not occur. Thus, the clausal elementary tree required to derive first modal inversion is ill-formed, and the derivation is invalid.

This restriction accords with the results of previous studies (see Chapter 2), which found first modal inversion to be unacceptable in SUSE, as well as the study reported in



Chapter 3, wherein participants rated first modal inversion similarly to ill-formed double modal items.<sup>13</sup>

The potential auxiliary tree structures proposed for first-place modals in SUSE are summarized in Figure 4.13.<sup>14</sup>

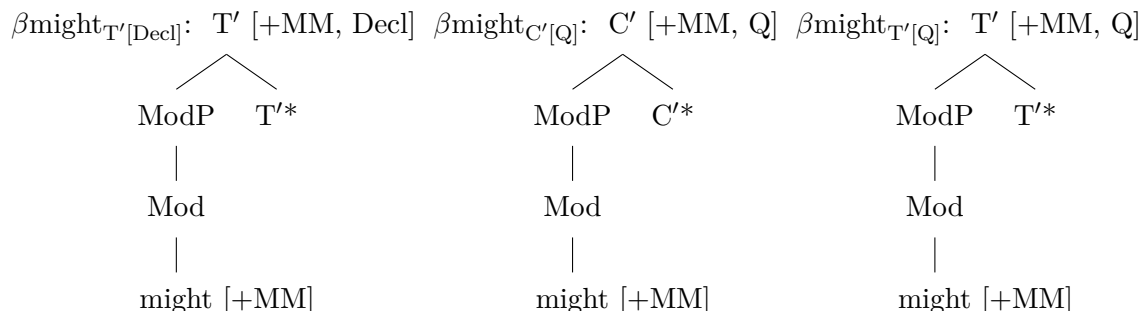


Figure 4.13: Potential auxiliary trees for first-place *might* in SUSE

First, every regional double modal dialect includes at least one first-place modal with a structure isomorphic to  $(\beta\text{might}_{T'[\text{Decl}]})$ : this enables the derivation of declarative double modal sentences, as described in Section 4.2. Next, based on the results reported in Chapter 3, in Kentucky, Tennessee, and Texas Englishes,  $(\beta\text{might}_{C'[\text{Q}]})$ -type structures are also available, which allow joint inversion in questions. Finally, in Tennessee English, the additional availability of  $(\beta\text{might}_{T'[\text{Q}]})$ -type structures permits second modal inversion as an alternative question-formation pattern.<sup>15</sup>

<sup>13</sup>In the acceptability judgment task study described in Chapter 3, first modal inversion was rated significantly higher than second modal inversion in Kentucky. While this may indicate that first modal inversion is (at least marginally) acceptable for some speakers of this dialect, Kentucky participants' ratings for first modal inversion and unacceptable double modal items were still not significantly different, and the empirical evidence in the literature to date strongly suggests that this pattern is not generally possible in SUSE.

<sup>14</sup>Whether the first-place modals in  $(\beta\text{might}_{T'[\text{Decl}]})$ ,  $(\beta\text{might}_{C'[\text{Q}]})$ , and  $(\beta\text{might}_{T'[\text{Q}]})$  are distinct lexical items remains to be investigated. Such differentiation might be warranted if, in SUSE, these variants can be shown to have distinct properties, e.g. co-occurrence with distinct modal combinations. Notably, Di Paolo (1986) observes that in Texas English, speakers preferred second modal inversion for *might could* and *might would* but demonstrated no dominant preference between joint and second modal inversion for *might should*. It remains to be seen whether these patterns obtain in present-day Texas English or more generally in SUSE; nevertheless, these data may support at least a lexical distinction between *might* in  $(\beta\text{might}_{C'[\text{Q}]})$  and in  $(\beta\text{might}_{T'[\text{Q}]})$ .

<sup>15</sup>It is likely that additional restrictions prevent two or more copies of  $(\beta\text{might}_{T'[\text{Decl}]})$ ,  $(\beta\text{might}_{C'[\text{Q}]})$ , and/or  $(\beta\text{might}_{T'[\text{Q}]})$  from adjoining to the same clausal elementary tree. Duplicate forms in double modal constructions seem to be disallowed in general: none are attested in Mishoe and Montgomery 1994, Montgomery and Nagle 1994, or Fennell and Butters 1996. Whether this prohibition is lexical, syntactic, or semantic in nature is beyond the scope of this work.

This regional distribution of structures accords with the broad patterns observed in the study reported in Chapter 3. Nevertheless, it must be stressed, following Boertien (1979), that SUSE double modals are subject to idiolectal variation. Thus, for a given speaker, structures for joint and/or second modal inversion may not be available, or may exist for only a subset of modal combinations.

As reviewed in Chapter 2, previous syntactic analyses predict the exclusive availability of joint inversion (Di Paolo, 1989), second modal inversion (Labov, 1972; Nagle, 2003; Close, 2004; Hasty, 2012b), or both joint and second modal inversion (Boertien, 1986; Battistella, 1995). None of these can straightforwardly account for the results of the study reported in Chapter 3, where it was found that certain dialects only allow joint inversion while another permits either joint or second modal inversion. Since, in the present TAG-based analysis, joint and second modal inversion result from the selection of distinct elementary structures for adjoining—i.e. either  $(\beta\text{might}_{C'[Q]})$  or  $(\beta\text{might}_{T'[Q]})$ —this analysis can account for dialects that allow (or prohibit) one or more inversion patterns, as outlined in Table 4.1.

Pattern	Available Structures	Inverted Modal(s)
(i)	$(\beta\text{might}_{T'[\text{Decl}]})$	None
(ii)	$(\beta\text{might}_{T'[\text{Decl}]})$ , $(\beta\text{might}_{C'[Q]})$	Joint
(iii)	$(\beta\text{might}_{T'[\text{Decl}]})$ , $(\beta\text{might}_{C'[Q]})$ , $(\beta\text{might}_{T'[Q]})$	Joint, second modal
(iv)	$(\beta\text{might}_{T'[\text{Decl}]})$ , $(\beta\text{might}_{T'[Q]})$	Second modal

Table 4.1: Summary of inversion patterns as predicted by the TAG analysis

Pattern (i) is exhibited by speakers for whom double modals are only a feature of declarative sentences, as is the case for at least one participant in Boertien 1979 and another in Close 2004. Patterns (ii) and (iii) reflect the findings of the study reported in Chapter 3: the former for Kentucky English and Texas English, the latter for Tennessee English. Pattern (iv) was not found in the present study; nevertheless, the exclusive availability of second modal inversion remains a combinatorial possibility in the TAG-based analysis. This pattern has been argued to obtain in at least Arkansas English (Close, 2004) and Eastern Tennessee English (Hasty, 2012a).<sup>16</sup>

<sup>16</sup>In theory, a dialect in which double modals occur in interrogative but not declarative clauses is also a combinatorial possibility. Such a dialect would encode  $(\beta\text{might}_{C'[Q]})$  and/or  $(\beta\text{might}_{T'[Q]})$ -type structures, but not  $(\beta\text{might}_{T'[\text{Decl}]})$ -type structures. The existence of such a dialect is doubtful, however. As noted in Chapter 2, naturalistic questions containing double modals are extremely rare as compared to declaratives. Moreover, in previous elicitation studies (e.g. Boertien 1979, Close 2004), the speakers who accepted double modals in questions formed a proper subset of those who accepted declarative double modals. Since interrogatives are generally marked in contrast to declaratives, it may be that double modals are permitted in marked environments only if they are possible elsewhere, i.e. if a dialect or idiolect allows double modals in interrogatives, then it also allows double modals in declaratives.

The specification of C'- and T'-recursive structures for SUSE first-place modals, simultaneously made available in the grammar, may seem uneconomical in comparison to the previous approaches. However, the addition of a finite number of elementary tree variants for a limited set of first-place modals does not affect the overall finiteness of the grammar (Frank, 2002).

Moreover, the existence of both structural types may satisfy certain other grammatical conditions. Di Paolo (1989) observes that double modals display “unit-like” behaviour with respect to certain syntactic processes, including joint inversion. The precise nature of this condition remains to be investigated since double modals are also susceptible to “non-unit-like” behaviour, e.g. second modal inversion; however, there may be, for instance, a syntactic preference for double modals to appear in the same C/T domain. Under this hypothesis, in a question where the second modal surfaces in C, the first modal is attracted to the same C domain. Since the second modal retains a trace (or copy (Hornstein et al., 2005)) in T, the first modal may also be attracted to the T domain. In a declarative clause, by contrast, the second modal only appears in T, and thus the first modal may only adjoin in the T domain.<sup>17</sup> Any condition of this sort, coupled with the evidence reviewed in Section 4.2 for adjoining first-place but not second-place modals, would require the existence of both C'- and T'-recursive forms of structure in a TAG-based analysis of SUSE.

## 4.4 Extensions

This section outlines potential extensions of the TAG-based analysis to account for the existence of higher-order combinations of modals as well as double modals with intervening negation or perfect auxiliaries.

First, as noted in Chapter 2, some speakers of SUSE allow combinations of more than two modals. Although these complex constructions are rarely attested in the literature, triple modals have been recorded in the Carolinas, as shown in (39a). Quadruple modals, such as (39b), have also been judged “sensible” to certain African American speakers of Chicago English (Herndobler and Sledd, 1976), but have not been attested in any of the sources compiled in Reed and Montgomery’s (n.d.) corpus.

- (39) a. [...Y]ou may might can get one right over there at Wicks.  
(Mishoe and Montgomery, 1994, p.9)
- b. He may might must can sing. (Herndobler and Sledd, 1976, p.192)

In a TAG-based analysis, triple (or quadruple) modals can be generated via recursion. For example, as shown in Figure 4.14, *may might can* in (39a) can be derived through repeated applications of adjoining. First,  $(\beta\text{may}_{T'})$  adjoins to  $(\beta\text{might}_{T'})$  at the root, where

<sup>17</sup>Notice that this hypothesized condition also explains the absence of  $(\beta\text{might}_{C'[\text{Decl}]})$ -type structures in the grammar, which otherwise remain a logical possibility.

instances of [+MM] can unify. Subsequently, ( $\beta\text{might}_{T'}$ ) adjoins to the clausal elementary tree ( $\alpha\text{can\_get}$ ) at  $T'$ , where instances of [+MM] can again unify.

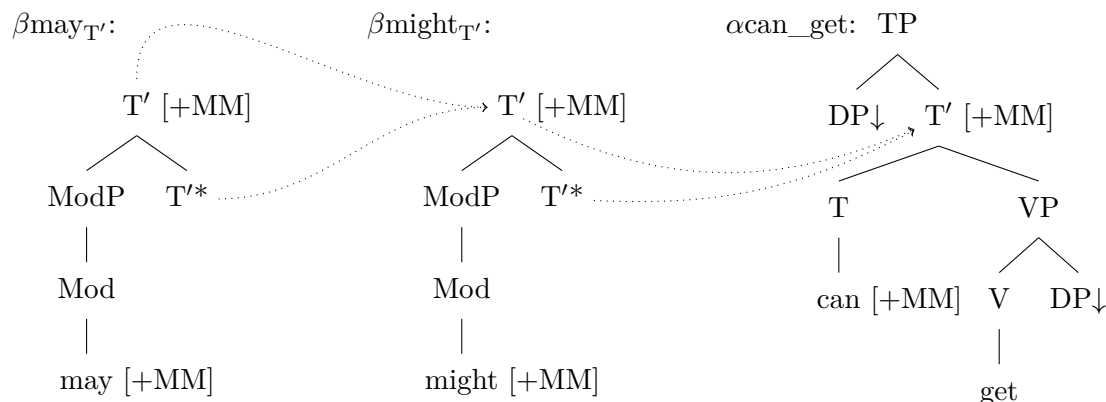


Figure 4.14: Recursive adjoining of first-place modals

Note that the present analysis imposes no bounds on recursion. In theory, this enables the generation of strings of five or more modals; however, such combinations have not been attested in SUSE (Bour, 2015). Extra-syntactic constraints on processing or semantic interpretation may limit the extent of recursion, as even triple modals are “quite complex” to interpret (Bour, 2015).

As discussed in Chapter 2, some speakers of SUSE also allow various syntactic heads to intervene between double modals, including negation, as in (40a), and the perfect auxiliary, as in (40b).<sup>18</sup>

- (40) a. I might not can go to the store. (Hasty, 2012b, p.1720)  
b. He might have/’ve/-a could done it. (Nagle, 2003, p.352)

In a TAG-based analysis, following the CETM, a clausal elementary tree must form a single extended projection. In (40a) and (40b), Neg and Perf are unexpected in the main clausal projection since these heads seemingly appear above T.

<sup>18</sup>“Unit-like” joint inversion and “non-unit-like” separation of double modals across intervening materials (Di Paolo, 1989) may seem to be incompatible processes. Nevertheless, previous elicitation studies have found that some speakers at least marginally accept both patterns. For instance, two participants interviewed by Pampell (1975) at least marginally accepted joint inversion (in *might could* and either *might should* or *might would*) and accepted placement of negation between the modals, e.g. *might not could*, as well as intervening quantifier stranding, e.g. *might all could*. Boertien (1979) also reports that the speaker who accepted joint inversion (in *might can*) generally accepted placement of *not* between any licit pairing of modals. Furthermore, while Di Paolo (1986) does not report data for individual speakers, she finds that joint inversion is at least marginally possible overall in Texas English. She also finds that intervening negation is possible in this dialect: modal + *not* + modal was the preferred pattern for *might could*; *might should* exhibited no preference between this pattern and modal + modal + *n’t/not*.

One possible solution is to consider intervening heads to be base-generated in the same extended projection as the first-place modal. Figure 4.15 illustrates potential trees for  $(\beta\text{might\_not}_{T'})$  and  $(\beta\text{might\_have}_{T'})$  to be used in deriving (40a) and (40b), respectively.

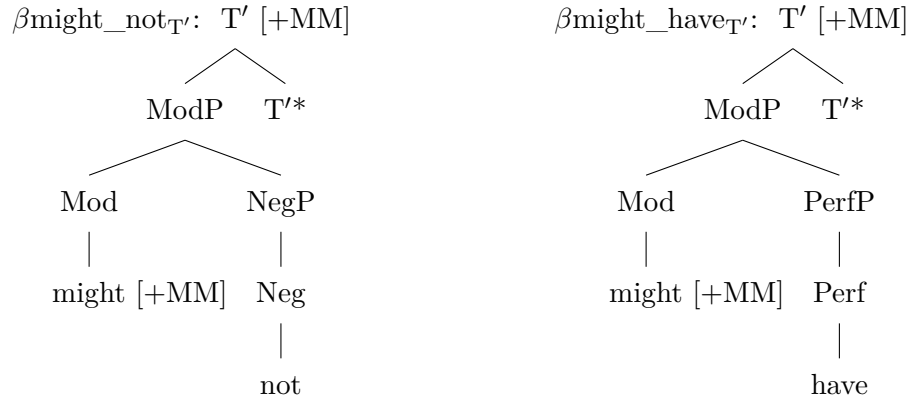


Figure 4.15: Possible extended projections of first-place *might*

The trees outlined in Figure 4.15 do not strictly represent extended projections of first-place modals since they include lower projections. An alternative approach is to relegate the intervening Neg/Perf head to a separate auxiliary tree. Both higher modals and intervening materials are then added via recursive adjoining, as shown in Figure 4.16.

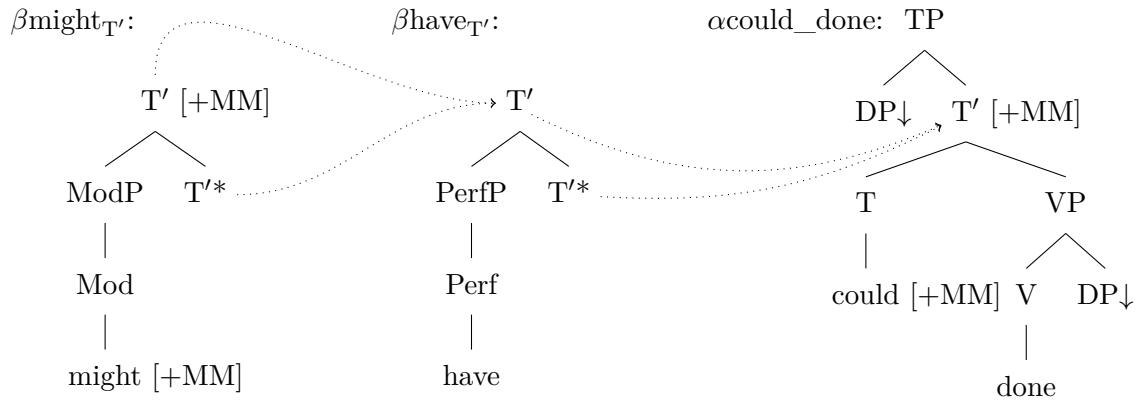


Figure 4.16: Recursive adjoining of first-place *might* and *have*

It remains to limit the intervening Neg/Perf auxiliary trees such that adjoining yields double modal sentences and not ungrammatical strings, e.g. *\*He have could done it*. While the details are not explored here, the desired restrictions on adjoining Neg/Perf auxiliary trees may be obtained through feature unification.

Regardless of which approach is taken, an additional complication arises in accounting for (40b). Under the present proposal, the intervening perfect auxiliary originates in either  $(\beta\text{might\_have}_{T'})$  or  $(\beta\text{have}_{T'})$ , which adjoins to the main clausal elementary tree during the course of the derivation. Following (28), agreement dependencies hold within, not across, elementary trees; however, the verb *done* appears as a past participle in the main clausal elementary tree despite the apparent lack of a preceding perfect auxiliary in its extended projection.

One possibility is that the Perf head in the auxiliary tree bears a feature that motivates selection of a past participle verb form, e.g. [Perf] (Adger, 2003). This feature percolates through the auxiliary tree and can thereby spread, via feature unification, to  $T'$  in the main clausal elementary tree. As such,  $(\beta\text{might\_have}_{T'})$  (or  $(\beta\text{have}_{T'})$ ) must combine with a clausal elementary tree that contains not only a [+MM]-valued second-place modal but also a following past participle, as in (40b). The use of feature unification for enforcing inter-elementary-tree selectional relations is motivated by Frank (2002), who provides a similar account for verbs that select finite CP complements.

The treatment of intervening materials offered above is only preliminary: given the core analysis in Sections 4.2 and 4.3, however, it has been shown that a TAG-based extension to these facts is at least possible. One remaining question is whether intervening materials can co-occur with double modal inversion in a question: to the author's knowledge such data have not been attested nor tested in elicitation studies. It may be that only declarative,  $T'$ -recursive variants exist for, e.g.,  $(\beta\text{might\_have})$  or  $(\beta\text{have})$ , although the reasons for this restriction remain to be investigated.

It also remains to consider the range of permissible intervening materials. While first-place modals have been attested with *not* and, separately, with *have*, it is unclear whether both Neg and Perf may follow the first modal in a double modal construction. Moreover, to the author's knowledge, there have been no naturalistic observations of other auxiliaries, such as progressive *be*, intervening between double modals. Whether such combinations are unacceptable, or merely rare, remains to be investigated.

The complex phenomena described in this section have been problematic for previous approaches to the SUSE double modal construction (see Chapter 2). In particular, under an adverbial analysis such as Battistella 1995, it is unclear how a first-place (i.e. adverbial) modal can select for a following NegP or PerfP. Intervening projections also challenge accounts that place both modals under a single head, such as Boertien 1986. Analyses that posit a distinct functional head for first-place modals, such as Hasty 2012b, must account for the appearance of multiple modals, NegP, or PerfP above T.

Under a TAG-based analysis, by contrast, recursion enables the generation of triple and quadruple modals without the need for additional stipulations. Furthermore, intervening

Neg and Perf heads can be relegated to positions outside of the main clausal elementary tree, obviating any violations to the standard order of the clausal hierarchy of projections.

## 4.5 Summary

This chapter has outlined a TAG-based approach to the double modal construction and other complex modal phenomena in SUSE. Under this view, first-place modals are introduced by adjoining auxiliary trees to the main clausal elementary tree.  $C'$ -recursive variants of these auxiliary trees are available in dialects where joint inversion is acceptable; meanwhile,  $T'$ -recursive variants may be constrained such that second modal inversion is either acceptable or unacceptable.

The present analysis has been shown to better capture certain empirical facts than previous approaches to the SUSE double modal construction. First, in contrast to the adverbial approach (Labov, 1972; Battistella, 1995; Close, 2004), under the TAG-based analysis, first-place modals can be constrained to only combine with (certain) second-place modals through  $[\pm MM]$  feature unification. Next, in terms of inversion patterns, previous analyses predict the exclusivity of joint (Di Paolo, 1989), second modal (Labov, 1972; Nagle, 2003; Close, 2004; Hasty, 2012b), or joint and second modal inversion (Boertien, 1986; Battistella, 1995). By contrast, the TAG-based analysis can account for regional variation: the availability of joint or second modal inversion in a given dialect is determined by which auxiliary tree structures are defined for first-place modals. Finally, the TAG-based analysis can be extended to account for data which have challenged previous approaches: higher-order combinations of modals and double modals with intervening projections.

It remains for the range of possible regional and idiolectal variation with respect to double modal inversion and other complex phenomena to be studied in depth. Due to the rarity of higher-order modal combinations and double modals with intervening materials, further investigation is also necessary to determine how these constructions interact with syntactic processes such as question formation.

## Chapter 5

# Conclusion

This thesis set out to explore the patterns of double modal subject-auxiliary inversion in SUSE. To this end, it offers empirical and theoretical contributions to the study of syntactic variation in English dialects. First, this thesis presents an inter-regional study of double modal inversion in three varieties of SUSE: Kentucky English, Tennessee English, and Texas English. While previous studies have examined the behaviour of double modals in questions in Tennessee English (Hasty, 2012a) and in Texas English (Di Paolo et al., 1979; Di Paolo, 1986), none has compared data from multiple regional varieties. This study also imparts new data from Kentucky English. Second, this thesis advances a novel theoretical analysis to account for the results of the present study.

This chapter gives brief summaries of the present findings and the proposed analysis followed by an outline of directions for future work.

### 5.1 Summary

This thesis has addressed two main empirical questions, restated in (41):

- (41) i. Is joint inversion of double modals acceptable in SUSE?
- ii. Are there regional differences in inversion patterns within SUSE?

To investigate the relative acceptability of double modal inversion patterns in SUSE, an acceptability judgment task study was conducted with speakers of Kentucky, Tennessee, and Texas Englishes. With respect to (41i), it was found that participants generally preferred joint inversion of double modals, as compared to first and second modal inversion. Moreover, with respect to (41ii), judgments varied by region: while Kentucky and Texas participants demonstrated a significant preference for joint inversion, Tennessee participants exhibited no significant preferences between joint and second modal inversion. Thus, while joint inversion appears to be acceptable in SUSE (at least for the sample of speakers considered in this study), the range of available patterns is subject to regional variation.

The results of this experiment align with those of Di Paolo et al. (1979), who report that joint inversion is acceptable in Texas English. However, the present findings diverge



from those of Di Paolo (1986), who finds joint inversion to be marginal as compared to second modal inversion in Texas English; and those of Hasty (2012a), who finds second modal inversion to be preferred in Tennessee English. These discrepancies may stem from methodological and sociolinguistic factors since the present study did not control for participant age or home county.

The present results cannot be immediately reconciled with previous theoretical analyses of the SUSE double modal construction, which have predicted the exclusive availability of joint (Di Paolo, 1989), second modal (Labov, 1972; Nagle, 2003; Close, 2004; Hasty, 2012b), or both joint and second modal inversion (Boertien, 1986; Battistella, 1995). The penultimate chapter of this thesis has outlined a novel, TAG-based model of SUSE double modals to account for the experimental results. Under this approach, first-place modals are introduced via separate auxiliary trees that adjoin to the main clausal elementary tree. In certain regional dialects, the availability of a  $C'$ -recursive auxiliary tree enables joint inversion, while constraints on adjoining  $T'$ -recursive variants either permit or prohibit second modal inversion.

## 5.2 Future work

This thesis represents a first attempt at a comparative analysis of double modal inversion patterns in SUSE. As such, it remains for future work to generalize beyond the scope of the present study.

First, the present study compares the use of inversion patterns in only three varieties of SUSE. It is possible that speakers of other regional dialects employ different inversion strategies: for example, speakers of a certain dialect might use second modal inversion to the exclusion of joint and first modal inversion. Naturalistic data would seem to support the existence of such a dialect since only second modal inversion has been attested to date; however, even those elicitation studies that report a strong preference for second modal inversion, such as Close 2004 and Hasty 2012a, did not obtain uniform results (see Chapter 2). Nevertheless, previous studies on inversion patterns have largely focused on Tennessee English and Texas English, and double modal questions in a number of regional dialects remain to be investigated. In future work, the present analysis might be extended to other varieties of SUSE, such as those spoken in Alabama, Georgia, Louisiana, and Mississippi (Montgomery, 1998).

Second, this study has tested the general acceptability of inversion patterns in SUSE across the common double modals *might could* and *might should*. As suggested by Di Paolo (1986), it is possible that different modal combinations tend to undergo distinct forms of inversion—for example, *might could* might be more susceptible to second modal inversion than *might should*. Since Di Paolo (1986) only considers data from Texas English, it remains for future work to determine whether SUSE double modals pattern in significantly different

ways in general or only within certain regional dialects. A preliminary result might be obtained by reassessing the present data with MODAL COMBINATION as a factor. It also remains for a systematic study to address inversion patterns for less common combinations, such as *might can*. Note that any extensive investigation of lexical variation in inversion patterns would require the careful construction of control items since not all varieties (or individual speakers) of SUSE accept all possible double modal combinations (Mishoe and Montgomery, 1994; Montgomery and Nagle, 1994; Fennell and Butters, 1996).

Furthermore, the present study does not address all possible variables that may affect speakers' use of double modal inversion patterns. In terms of structural factors, this study focuses on *yes/no* questions. It is possible, as suggested by Close (2004), that different patterns arise in *wh*-questions. The empirical data for double modal *wh*-questions are currently too sparse to test this hypothesis; nevertheless, since the syntactic processes involved in forming *yes/no* and *wh*-questions are otherwise identical, such variation would be unexpected. It is also possible that sociolinguistic variables, such as educational background, social class, and age, impact the range of inversion patterns that an individual speaker uses. Previous research suggests that double modal acceptance in SUSE is associated with social factors including lack of higher education, lower social class, and younger as well as older speaker groups (Hasty, 2011, 2012a); however, it remains for future work to determine the extent to which any sociolinguistic variables influence speaker judgments for double modal inversion in SUSE.

More generally, this study has addressed the empirical question of how double modals interact with syntactic processes in SUSE. As noted in Chapter 1, this line of investigation is of theoretical significance since existing analyses of the SUSE double modal construction offer divergent predictions. Moreover, a number of complex phenomena remain to be studied in depth. For example, in SUSE, elicitation studies have not tested the interaction of syntactic processes and higher-order combinations of modals.<sup>1</sup> By contrast, with respect to Scots and Scottish English, Bour (2014, 2015) presents survey data from the Scottish Borders that illustrate the behaviour of triple modals in negatives and questions. SUSE double modals with intervening materials are also relatively under-studied, although a number of studies (Coleman, 1975; Pampell, 1975; Boertien, 1979; Di Paolo, 1986; Hasty, 2012a) find modal + *not* + modal negation patterns to be acceptable for many speakers, and Coleman (1975) and Di Paolo (1986) find double modals with intervening perfect auxiliaries to be acceptable to some speakers in North Carolina and in Texas, respectively. It remains uncertain how these complex constructions interact with question formation. Additionally, no study has tested the acceptability of double modals with intervening progressive auxiliaries. Such constructions have not been attested in any of the naturalistic sources compiled in Reed

<sup>1</sup>While previous studies have addressed *might could ought(a)* and *might should ought(a)*, these are not true triple modals; see Chapter 2, footnote 2.

and Montgomery’s (n.d.) corpus, but it is not known if this is an indication of rarity or overall unacceptability. Finally, it remains for future work to explore the susceptibility of these complex modal phenomena to regional variation within SUSE.

In terms of theoretical work, Chapter 4 has outlined a TAG-based analysis of the SUSE double modal construction to capture the inversion patterns found in the present study. A preliminary extension to higher-order combinations of modals, as well as double modals with intervening negation or auxiliaries, has also been offered. It remains to extend this analysis to account for other double modal phenomena. For example, the SUSE double modal construction permits a floating quantifier to appear before, between, or after the modals, as shown in (42).

(42) We (all) might (all) could (all) go to the store. (Hasty, 2012a, p.64)

Accounting for the potential positions of *all* in (42) necessitates a TAG-based analysis of floating quantifiers. One approach would be to adapt Bobaljik’s (1995) adverbial analysis such that floating *all* anchors an auxiliary tree in TAG. This possibility is explored further in Williamson and Han 2017.

This thesis has offered a comparative investigation of double modal inversion patterns in SUSE. It has shown that joint double modal inversion, which is often considered marginal in the literature, is not only accepted but preferred for certain speakers of Kentucky English and Texas English. Furthermore, it has shown that certain Tennessee English speakers accept joint as well as second modal inversion. In so doing, this thesis has furthered empirical understanding of syntactic variation in English, and has also provided new data with which to evaluate theoretical approaches to the SUSE double modal construction.

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# Appendix A

## Experimental Stimuli

### A.1 Practice items

- (1) a. John and Mary are at the zoo. Mary says to John:  
b. “The penguins seem to have enjoyed the fish that the keeper gave them.”
- (2) a. Jack and Nancy have just attended a class on work skills. Nancy says to Jack:  
b. “The teacher must have been thought that we intended to find summer jobs.”
- (3) a. Bill and Fred are at a benefit concert. Bill says to Fred:  
b. “The rockstar dared to be leaving in the middle of his show.”
- (4) a. John and Sarah are watching a game show on TV. John says:  
b. “The contestant could has received the new car by answering one more question correctly.”
- (5) a. Jack and Mary are planning to landscape their yard. Mary says:  
b. “We might could plant a row of poplar trees behind the house.”
- (6) a. Mary and Nancy are discussing the classes that they have taken. Nancy says:  
b. “The algebra grew to be my favorite subject in high school.”
- (7) a. Bill and Isabella are looking for Isabella’s purse. Bill says:  
b. “You might should be check the lost and found at the gym.”
- (8) a. Hanah and Sarah are gossiping about Kelly, a co-worker. Hannah says:  
b. “Kelly should not take anything from the office fridge without asking permission.”

### A.2 Test items

- (1) a. Billy is at the park with his mother. He says to her:  
b. i. “Might could I play on the monkey bars?”  
ii. “Might I could play on the monkey bars?”  
iii. “Could I might play on the monkey bars?”

- iv. "Could I play on the monkey bars?"
- (2) a. Sarah is planning her birthday party. She says to her parents:
  - b. i. "Might could I invite Anne and Jenny?"
  - ii. "Might I could invite Anne and Jenny?"
  - iii. "Could I might invite Anne and Jenny?"
  - iv. "Could I invite Anne and Jenny?"
- (3) a. Mary is talking to Jim on the phone when her kids start fighting. She says:
  - b. i. "Might could I call you back later?"
  - ii. "Might I could call you back later?"
  - iii. "Could I might call you back later?"
  - iv. "Could I call you back later?"
- (4) a. Jerry forgot his homework assignment at home. He says to his teacher:
  - b. i. "Might could I hand it in tomorrow?"
  - ii. "Might I could hand it in tomorrow?"
  - iii. "Could I might hand it in tomorrow?"
  - iv. "Could I hand it in tomorrow?"
- (5) a. Nancy isn't feeling very well at school. She says to her teacher:
  - b. i. "Might could I be excused from class?"
  - ii. "Might I could be excused from class?"
  - iii. "Could I might be excused from class?"
  - iv. "Could I be excused from class?"
- (6) a. Tracy is teaching Tom to cook. She tastes the soup they're making and says:
  - b. i. "Might could you add some more salt?"
  - ii. "Might you could add some more salt?"
  - iii. "Could you might add some more salt?"
  - iv. "Could you add some more salt?"
- (7) a. June is walking around the room during class. Her teacher says:
  - b. i. "Might could you find a seat somewhere?"
  - ii. "Might you could find a seat somewhere?"
  - iii. "Could you might find a seat somewhere?"
  - iv. "Could you find a seat somewhere?"
- (8) a. John brings his car to the repair shop. He says to the mechanic:
  - b. i. "Might could you have it ready by four o'clock?"
  - ii. "Might you could have it ready by four o'clock?"
  - iii. "Could you might have it ready by four o'clock?"
  - iv. "Could you have it ready by four o'clock?"
- (9) a. Peter and Joe are on a road trip, but their car is low on gas. Peter says:
  - b. i. "Might could there be a service station up ahead?"
  - ii. "Might there could be a service station up ahead?"

- iii. "Could there might be a service station up ahead?"
  - iv. "Could there be a service station up ahead?"
- (10) a. Henry forgot to bring his lunch to school. He calls his mother and says:
  - b. i. "Might could you bring me something to eat?"
  - ii. "Might you could bring me something to eat?"
  - iii. "Could you might bring me something to eat?"
  - iv. "Could you bring me something to eat?"
- (11) a. Kevin and Louise are booking a trip to New York. Louise says:
  - b. i. "Might could we take the eight o'clock flight?"
  - ii. "Might we could take the eight o'clock flight?"
  - iii. "Could we might take the eight o'clock flight?"
  - iv. "Could we take the eight o'clock flight?"
- (12) a. Jane is camping with Jill and wants to roast marshmallows. She says to Jill:
  - b. i. "Might could you start a fire for us?"
  - ii. "Might you could start a fire for us?"
  - iii. "Could you might start a fire for us?"
  - iv. "Could you start a fire for us?"
- (13) a. Mr. Jackson is quizzing his students on a math problem. He says:
  - b. i. "Might could one of you tell us the answer?"
  - ii. "Might one of you could tell us the answer?"
  - iii. "Could one of you might tell us the answer?"
  - iv. "Could one of you tell us the answer?"
- (14) a. Clara can't see the fine print on her prescription. She says to her daughter:
  - b. i. "Might could you read this to me?"
  - ii. "Might you could read this to me?"
  - iii. "Could you might read this to me?"
  - iv. "Could you read this to me?"
- (15) a. Rose is struggling with the lid on a jar of pickles. She says to her husband:
  - b. i. "Might could you open this for me?"
  - ii. "Might you could open this for me?"
  - iii. "Could you might open this for me?"
  - iv. "Could you open this for me?"
- (16) a. Max is lost in Paris and walks up to a police officer. He says:
  - b. i. "Might could you give me some directions?"
  - ii. "Might you could give me some directions?"
  - iii. "Could you might give me some directions?"
  - iv. "Could you give me some directions?"
- (17) a. Katie is confused by the many questions on a form. She says to her co-worker:
  - b. i. "Might should I fill out this section?"

- ii. "Might I should fill out this section?"
  - iii. "Should I might fill out this section?"
  - iv. "Should I fill out this section?"
- (18) a. John and Mary are writing wedding invitations. Mary says to John:
  - b. i. "Might should we invite your great-uncle Jim?"
  - ii. "Might we should invite your great-uncle Jim?"
  - iii. "Should we might invite your great-uncle Jim?"
  - iv. "Should we invite your great-uncle Jim?"
- (19) a. Kim discovers spoiled milk in Jake's fridge. She says to Jake:
  - b. i. "Might should I throw this out?"
  - ii. "Might I should throw this out?"
  - iii. "Should I might throw this out?"
  - iv. "Should I throw this out?"
- (20) a. Irma wants to throw a party at her parents' house. Her friend says:
  - b. i. "Might should we ask your parents first?"
  - ii. "Might we should ask your parents first?"
  - iii. "Should we might ask your parents first?"
  - iv. "Should we ask your parents first?"
- (21) a. Mark and Laura are hiking, but the path up ahead looks icy. Mark says:
  - b. i. "Might should we turn around here?"
  - ii. "Might we should turn around here?"
  - iii. "Should we might turn around here?"
  - iv. "Should we turn around here?"
- (22) a. Dean is talking loudly to Michael at the library. Michael says:
  - b. i. "Might should we be a little quieter?"
  - ii. "Might we should be a little quieter?"
  - iii. "Should we might be a little quieter?"
  - iv. "Should we be a little quieter?"
- (23) a. Robert and May have just witnessed a theft at the supermarket. May says:
  - b. i. "Might should we report this to someone?"
  - ii. "Might we should report this to someone?"
  - iii. "Should we might report this to someone?"
  - iv. "Should we report this to someone?"
- (24) a. Jack and Mara come home and see that their front door is open. Mara says:
  - b. i. "Might should we call the police?"
  - ii. "Might we should call the police?"
  - iii. "Should we might call the police?"
  - iv. "Should we call the police?"
- (25) a. Hannah is cooking stew for dinner. Steve is hungry and says to her:

- b.
    - i. “Might should that be ready to eat soon?”
    - ii. “Might that should be ready to eat soon?”
    - iii. “Should that might be ready to eat soon?”
    - iv. “Should that be ready to eat soon?”
- (26) a. Bill and Charlie are hungry, but they don’t want to cook. Bill says:
  - b.
    - i. “Might should we order a pizza tonight?”
    - ii. “Might we should order a pizza tonight?”
    - iii. “Should we might order a pizza tonight?”
    - iv. “Should we order a pizza tonight?”
- (27) a. Owen and Katie are walking by the grocery store. Owen says to Katie:
  - b.
    - i. “Might should we pick up some milk?”
    - ii. “Might we should pick up some milk?”
    - iii. “Should we might pick up some milk?”
    - iv. “Should we pick up some milk?”
- (28) a. Fred and Wanda are stuck in traffic. Wanda says to Fred:
  - b.
    - i. “Might should we take the next detour?”
    - ii. “Might we should take the next detour?”
    - iii. “Should we might take the next detour?”
    - iv. “Should we take the next detour?”
- (29) a. James is going to Rebecca’s potluck later. He says to her:
  - b.
    - i. “Might should I bring my homemade guacamole?”
    - ii. “Might I should bring my homemade guacamole?”
    - iii. “Should I might bring my homemade guacamole?”
    - iv. “Should I bring my homemade guacamole?”
- (30) a. Anna and Betty are waiting for Sam to get home from work. Betty says:
  - b.
    - i. “Might should he be here before six o’clock?”
    - ii. “Might he should be here before six o’clock?”
    - iii. “Should he might be here before six o’clock?”
    - iv. “Should he be here before six o’clock?”
- (31) a. Rachel and Cassie are lost in a foreign city. Cassie says to Rachel:
  - b.
    - i. “Might should we ask someone for directions?”
    - ii. “Might we should ask someone for directions?”
    - iii. “Should we might ask someone for directions?”
    - iv. “Should we ask someone for directions?”
- (32) a. Katie goes to ask her professor a question, but he’s on the phone. She says:
  - b.
    - i. “Might should I come back again later?”
    - ii. “Might I should come back again later?”
    - iii. “Should I might come back again later?”
    - iv. “Should I come back again later?”

## A.3 Filler items

### A.3.1 Acceptable declarative sentences with double modals

- (1) a. Julie is thirsty from playing in the yard. Her mother says:  
b. “I might could make us some iced tea.”
- (2) a. Alice calls her mother for a ride from her friend’s house. Her mother says:  
b. “I might could pick you up at eight o’clock.”
- (3) a. Irma and George are planning a vacation. George says to her:  
b. “We might could go to the beach on Friday.”
- (4) a. Clara is trying to book an appointment with her doctor. The receptionist says:  
b. “I might could schedule you in next Tuesday.”
- (5) a. Kim has seen rain in the forecast. She says to her son:  
b. “You might should take your umbrella today.”
- (6) a. Betty is forgetful, and has left her baking unattended in the kitchen. Steve says:  
b. “Those buns might should come out of the oven now.”
- (7) a. Tom has slept late and is in a rush for school. His mother says to him:  
b. “You might should eat something before you go.”
- (8) a. Dean and May are organizing a party. May says to Dean:  
b. “Five pizzas might should be enough for everyone.”

### A.3.2 Unacceptable declarative sentences with double modals

- (1) a. Paul is looking for a particular brand of cereal at the store. A clerk says:  
b. “We might could ordered it in for you.”
- (2) a. Jane is planning a party with Mary. Mary says to Jane:  
b. “We might could picked up some new board games to try.”
- (3) a. Sally is excited and jumping on the bed. Her mother says:  
b. “You could might get hurt doing that.”
- (4) a. Billy is playing close to the campfire. His father says:  
b. “You could might burn yourself if you’re not careful.”
- (5) a. John notices his dog is running around the house. He says to his wife:  
b. “I might should walking the dog soon.”
- (6) a. Betty and Owen have discovered that their car window is broken. Owen says:  
b. “We might should finding who did this.”
- (7) a. Alfred is tending to his wilted plants. His neighbor says to him:  
b. “You should might get some fertilizer for those.”
- (8) a. Stan and his wife are planning a trip to France. He says to her:  
b. “We should might teach ourselves some French.”

### A.3.3 Acceptable *yes/no* questions

- (1) a. Peter and Sue have been waiting at the bus stop for an hour. Peter says:  
b. “Has there been an accident somewhere?”
- (2) a. Nancy and Betsy are at the library. Nancy says to Betsy:  
b. “Have you finished reading ‘Pride and Prejudice’ yet?”
- (3) a. Freddie is scared to sleep in his bedroom. He says to his mother:  
b. “Have you checked under the bed for monsters?”
- (4) a. Henry is watching the storm outside. He says to his wife:  
b. “Have you ever seen so much lightning?”
- (5) a. George is ordering coffee from a server at a cafe. He says:  
b. “Could I possibly have some cream and sugar?”
- (6) a. Jerry is waiting for Lynn so that they can go on their date. He says:  
b. “Could you possibly be ready in five minutes?”
- (7) a. Billy is looking around the house for a missing toy. His mother says:  
b. “Could it be hiding behind the couch?”
- (8) a. Cassie is helping Max look for his wallet. She says to him:  
b. “Could it have been lost at the park?”

### A.3.4 Unacceptable *yes/no* questions

- (1) a. Ellen and Judy are waiting at the airport. Ellen says:  
b. “Have our flight been delayed?”
- (2) a. Greg and Ned are in line at a coffee shop. Greg says to Ned:  
b. “Do you liked the new latte here?”
- (3) a. John and Macy are deciding what to watch at the theater. Macy says:  
b. “Have anyone recommended the new superhero movie?”
- (4) a. Alice is preparing dinner in the kitchen. John says to her:  
b. “Do you wanted any help with that?”
- (5) a. Jenny is looking for a missing piece from her puzzle. Betsy says to her:  
b. “Should have you checked under the table?”
- (6) a. Lynn is shopping for jeans, but the store doesn’t have her size. Mary says:  
b. “Should have you tried the place next door?”
- (7) a. Bobby is putting together a model plane, but it’s wobbly. John says to him:  
b. “Could have you forgotten a piece here?”
- (8) a. Helen is pointing at a bird in a tree, but Fred can’t see it. He says:  
b. “Could have I been looking right at it?”