A corpus-based analysis of ongoing changes in the Australian English amplifier system

Dr. Martin Schweinberger

slides available at

www.martinschweinberger.de

R code upon request

The University
Of Queensland
AUSTRALIA

Phenomenon

(1) And you just have to hint well then it's a very good hint (ICE-AUS:S1A-012$A)

(2) They're all really cheap <#> They're all really nice, the t-shirts in there (ICE-AUS:S1A-009$B)

(3) It was so bad (ICE-AUS:S1A-044$B)

Intensification is related to the semantic category of *degree* (degree adverbs) and ranges between very low intensity (downtoning) and very high (amplifiers)

Motivation

- Amplification is major area of grammatical change (cf. Brinton and Arnovick 2006: 441)
  → ideal for investigating language variation and change
- Amplification is crucial for the "social and emotional expression of speakers" (Ito and Tagliamonte 2003: 258)
  → interesting for studies of social identity construction and identity marking
- Amplification is a linguistic subsystem which allows precise circumscription of a variable context (Labov 1972, 1966: 49)

Amplification represents an ideal case for testing mechanisms underlying language change!

Previous Research

Previous Research

Amplification

- substantial amount of corpus-based research on intensification (e.g Aijmer 2011, 2018; Fuchs 2016, 2017; Núñez Pertejo and Palacios 2014; Palacios and Núñez Pertejo 2012)

  → but mostly either focused on individual intensifiers or without regard to the intensified adjectives
- associated with teenage talk and young(ish) (female) speakers

  (Bauer and Bauer 2002; D'Arcy 2015; Macaulay 2006; Tagliamonte 2006, 2008)
- recently amplifier-adjective bigrams have come more into focus (e.g. Schweinberger 2017; Wagner 2017a,b)

Previous Research

- Intensifying *really* replaces *very* (lexical replacement)

  (e.g. D'Arcy 2015; Ito and Tagliamonte 2003; Tagliamonte 2005, 2008)
- No previous research on amplification in AusE
- Previous study of intensification in NZE (D'Arcy 2015; Bauer and Bauer 2002)

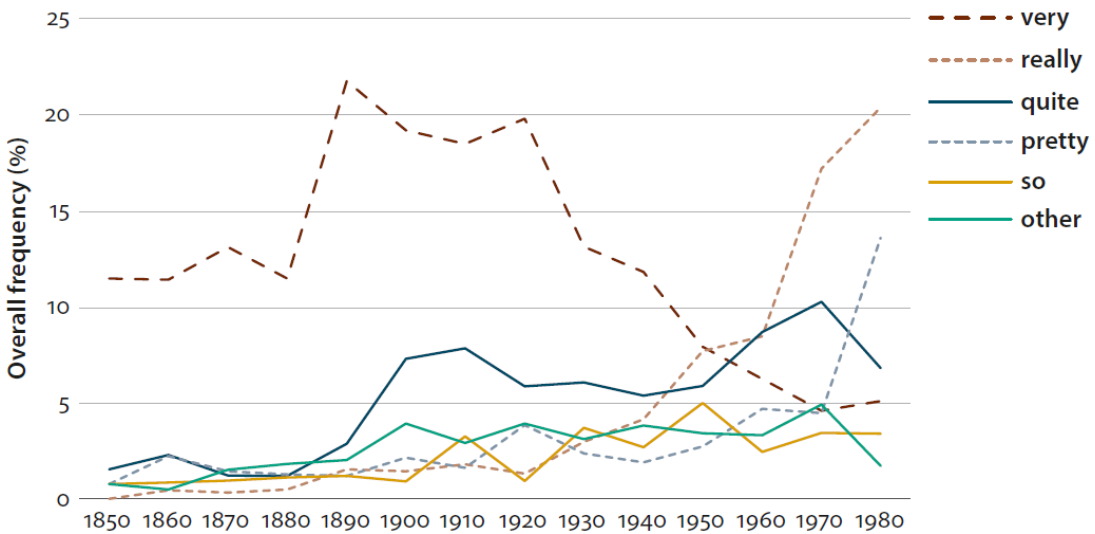


Figure 1: Adapted from D'Arcy (2015: 468)

Research Question

Q

Why is *very* replaced by *really* and
not by any other variant
(e.g. *so*, *quite*, *pretty*)?

→ What mechanisms underlie lexical replacement?

Hypothesis 1 (Broadening)

Successful variants are more bleached

(Mair 2004: "delayed increase of discourse frequency" hypothesis)

Argument

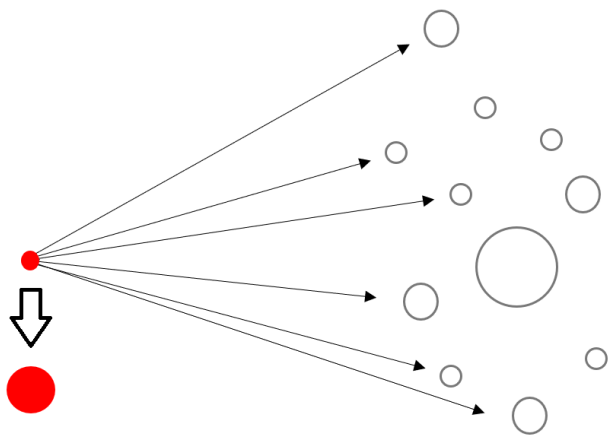
→ co-occurrence with many different adj. types

→ frequent use

→ deeper cognitive entrenchment

→ easier retrieval from memory

→ dominance within the amplifier system.



Prediction

Co-occurrence with many different adjective types

→ high lexical diversity

→ weak coll. attraction with specific adj. types

Hypothesis 2 (Specialization)

Successful variants associate with few but frequent adj. types

(Lorenz 2002: 144; Méndez-Naya 2003: 375; Tagliamonte and Roberts 2005: 285)

Argument

→ co-occurrence with high-freq. adj. types

→ frequent use

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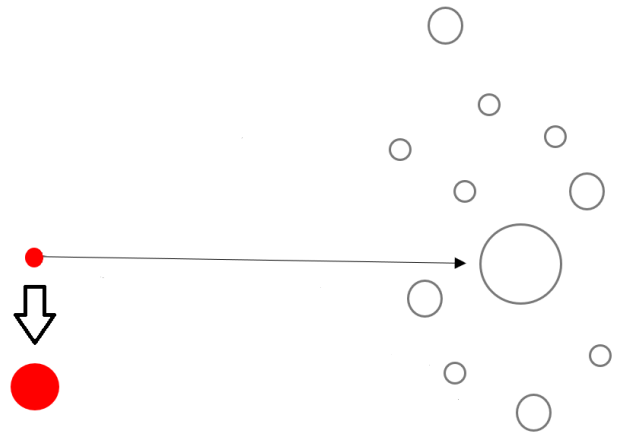


Prediction

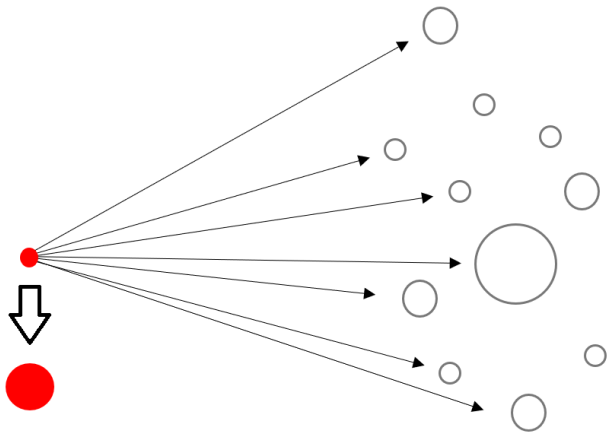
Co-occurrence with few high frequency adjectives

→ low lexical diversity

→ strong coll. attraction with high-freq. adj. types

Hypothesis 3 (Randomness)

We cannot predict which variants become successful based on their coll. profile.



Data and Methodology

Corpus data: ICE-Aus

The Australian component of the *International Corpus of English* (ICE-Aus) (Peters fc)

- Shared design across ICE components (allows meaningful comparisons between varieties of English)
- ICE-Aus corpus is being compiled and supervised by Pam Peters (Macquarie University)
- It consists of one million words (600,000 spoken and 400,000 written) representing diverse spoken and written text types (cf. next slide) with each file containing app. 2,000 words.
- Accompanied by metadata and biodata of speaker (extremely interesting resource for variationist analyses)

Mode	Conversation type	Register	Text type	Number of text files
SPOKEN (300)	Dialogues (180)	Private (100)	Face-to-face conversations	90
			Phonecalls	10
		Public (80)	Classroom Lessons	20
			Broadcast Discussions	20
			Broadcast Interviews	10
			Parliamentary Debates	10
			Legal cross-examinations	10
			Business Transactions	10
	Monologues (120)	Unscripted (70)	Spontaneous commentaries	20
			Unscripted Speeches	30
			Demonstrations	10
			Legal Presentations	10
		Scripted (50)	Broadcast News	20
			Broadcast Talks	20
			Non-broadcast Talks	10

Data Processing

- Spoken section of the Australian component of the International Corpus of English (ICE-Aus)
  (https://www.ausnc.org.au/corpora/ice)
- Part–of-speech tagged (OpenNLP vis R) the
- Retrieved adjectives (PoS–tag JJ)
- Determined whether adjective were preceded by an amplifier (member of a predefined set of amplifiers)
- Implemented a Sentiment Analysis of adjective types (emotional vs non-emotional) using the Syuzhet library in R (Jockers 2017)

Data Processing

- Determined if the same amplifier type had occurred within a span of three adjective slots previously ($\rightarrow$ priming)
- Added token frequency of adjective type (Tagliamonte and Roberts 2005)
- Removed...
  - negated adjectives
  - comparative and superlative forms
  - adjectives that were not amplified by at least two different amplifier types
  - adjectives that were preceded by downtoners
  - strange forms (e.g. *much*)

Data Processing

- Added semantic classification of adjective types based on Dixon (1977) (cf. also D'Arcy 2015; Tagliamonte and Roberts 2005; Tagliamonte 2006, 2008)
- Manual cross–evaluation of automated classification
- Metadata (genre, audience size, conversation type: samesex, mixedsex) and speaker information(age, sex)

Data Processing

Implementation of a Semantic VSM (Levshina 2015) (data driven/usage-based exclusion of maximizers/definition of variable context)

	get	see	use	hear	eat	kill
knife	31	16	69	0	2	0
cat	36	38	4	4	6	20
dog	66	58	9	34	28	12
boat	46	21	17	4	0	0
cup	59	6	5	1	1	0
pig	4	15	3	1	7	21
banana	7	2	2	0	12	0

Table 1: Example based on Evert (2018).

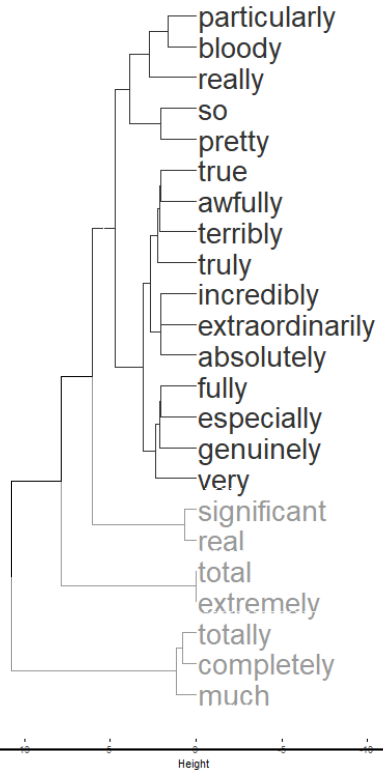


Figure 2 (right): Dendrogram showing the classification of adjective types based on their co-occurrence profile with adjectives.

Data Overview (ICE-Aus: spoken private dialogue)

Amplification	**N**	**%**	**Variants** (%)
∅ Amplification	1,014	76.36	
really	129	9.71	41.08
so	69	5.20	21.97
very	67	5.05	21.34
pretty	37	2.79	11.78
absolutely	4	0.30	1.27
bloody	2	0.15	0.64
awfully	1	0.08	0.32
genuinely	1	0.08	0.32
incredibly	1	0.08	0.32
particularly	1	0.08	0.32
terribly	1	0.08	0.32
true	1	0.08	0.32
Total	1,328 (314)	100 (23.64)	100

Table 2: Overview of amplifier frequencies and percentages in the final data set.

Data Overview (ICE-Aus: spoken private dialogue)

Age	**Sex**	**Speakers** (N)	**Adj.** (N)	***really*** (N)	***really*** (%)
17-25	Women	70	187	88	47.06
17-25	Men	21	46	14	30.43
26-40	Women	16	28	13	46.43
26-40	Men	12	26	7	26.92
41-80	Women	12	20	6	30.00
41-80	Men	6	7	1	14.29
Total		137	314	129	41.08

Table 3: Overview of adjective and *really* frequencies and percentages by age and gender in the final data set.

Data Overview (ICE-Aus: spoken private dialogue)

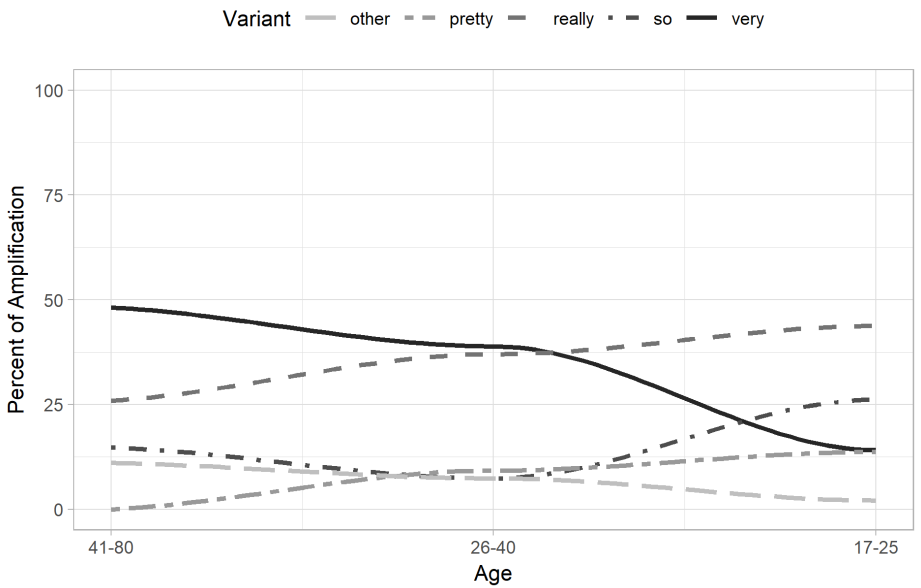


Figure 3: Percent of Amplifier Variants in Amplified Pre-Adjectival Slots across Genres and Syntactic Function.

Lexical Diversity

Hypothesis 1

- Co-occurrence with many different adjective types
  $\rightarrow$ high lexical diversity

Hypothesis 2

- Co-occurrence with few (but high frequency) adjective types
  $\rightarrow$ low lexical diversity

Lexical Diversity

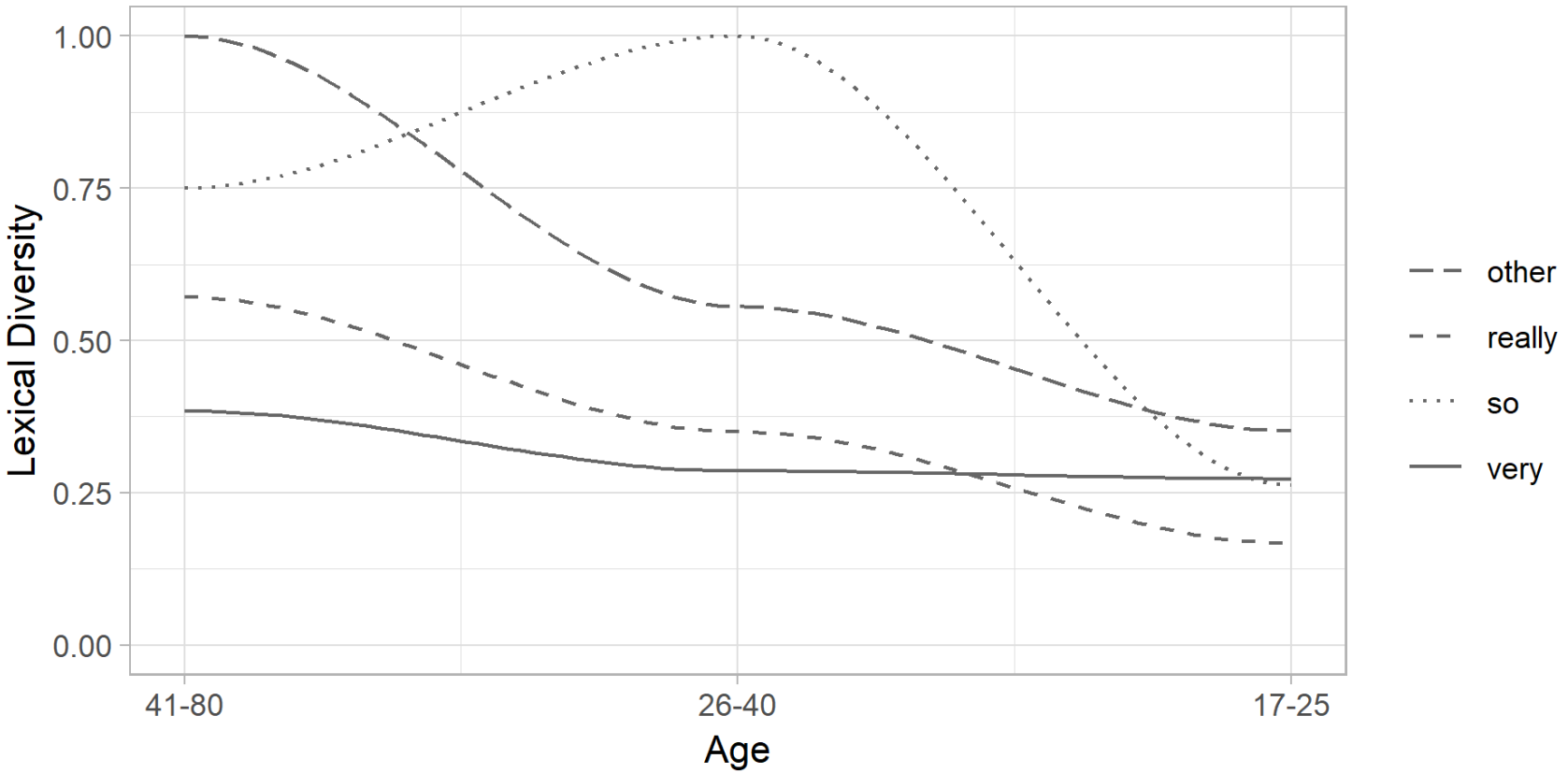


Figure 4: Lexical Diversity by Amp. Variant across Apparent Time

Covarying Collexeme Analysis

(Stefanowitsch and Gries 2005)

Why use CCA?

- Determines whether two elements in two slots of one construction attract or repel each other, e.g.

  → How does the probability of *very* occurring in the 1^{st} slot change if *nice* is used in the 2^{nd} slot?

- Provides measures of collocation strength

What is CCA?

- Extension and modification of Fisher's Exact test
- Here, slightly modified (improved) version of CCA presented in Stefanowitsch and Gries (2005).

Covarying Collexeme Analysis

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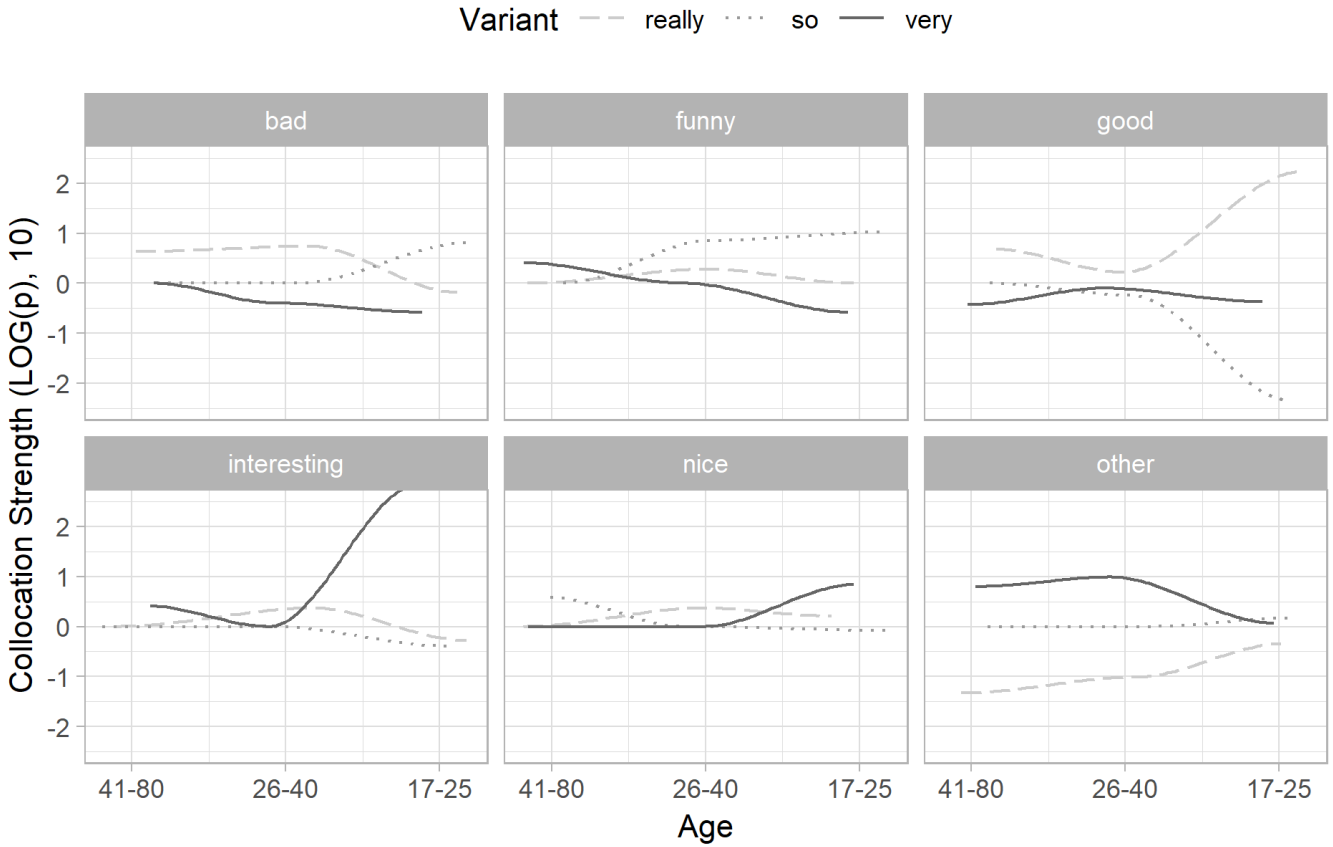

Figure 5: Coll. Stregth across App. Time by Adj. and Amp. Type

Boruta Analysis

(Kursa et al. 2010)

Why use Boruta?

- Alternative to regressions that can handle small data sets

What is Boruta?

- Variable selection procedure
- Name derived from a demon in Slavic mythology who dwelled in pine forests
- Extension/improvement of random forests
- Hundreds of forests are grown $\rightarrow$ distribution of parameters rather than singe values (higher reliability)

Problems of Boruta

- Cannot handle multicollinearity(!)
- Does not model nested/grouped data structure

Boruta Analysis

(Kursa et al. 2010)

Procedure

1. Addition randomness: shuffling copies of all features (shadow features).
2. Training of a random forest classifier on the extended data
3. Application of a feature importance measure (Mean Decrease Accuracy)
4. Checking whether a real feature has a higher importance than the best shadow features at each iteration
5. Continuous removal of unimportant features (features that are less important than shadow features)

Variable Coding

Dependent Variable(s)				
really	nominal	yes/no occurrence of pre-adjectival *really*		
Independent Variable(s)				
Age	categorical	17-25 | 26-40 | 41+	extra linguistic	
AudienceSize	nominal	Dyad | MultipleInterlocutors		
ConversationType	nominal	MixedSex | SameSex		
Gender	nominal	Female | Male		
Priming	nominal	prime | noprime		
Emotionality	nominal	emotional | nonemotional	intra linguistic	
Function	nominal	attributive | predicative		
SemanticCategory	categorical	semantic category of adj.		
Gradability	nominal	gradable | nongradable		
Adjective	categorical	bad | funny | good | interesting | nice | other		
Freq	numeric	Frequency of adj. by age group		

Boruta Analysis

(Kursa et al. 2010)

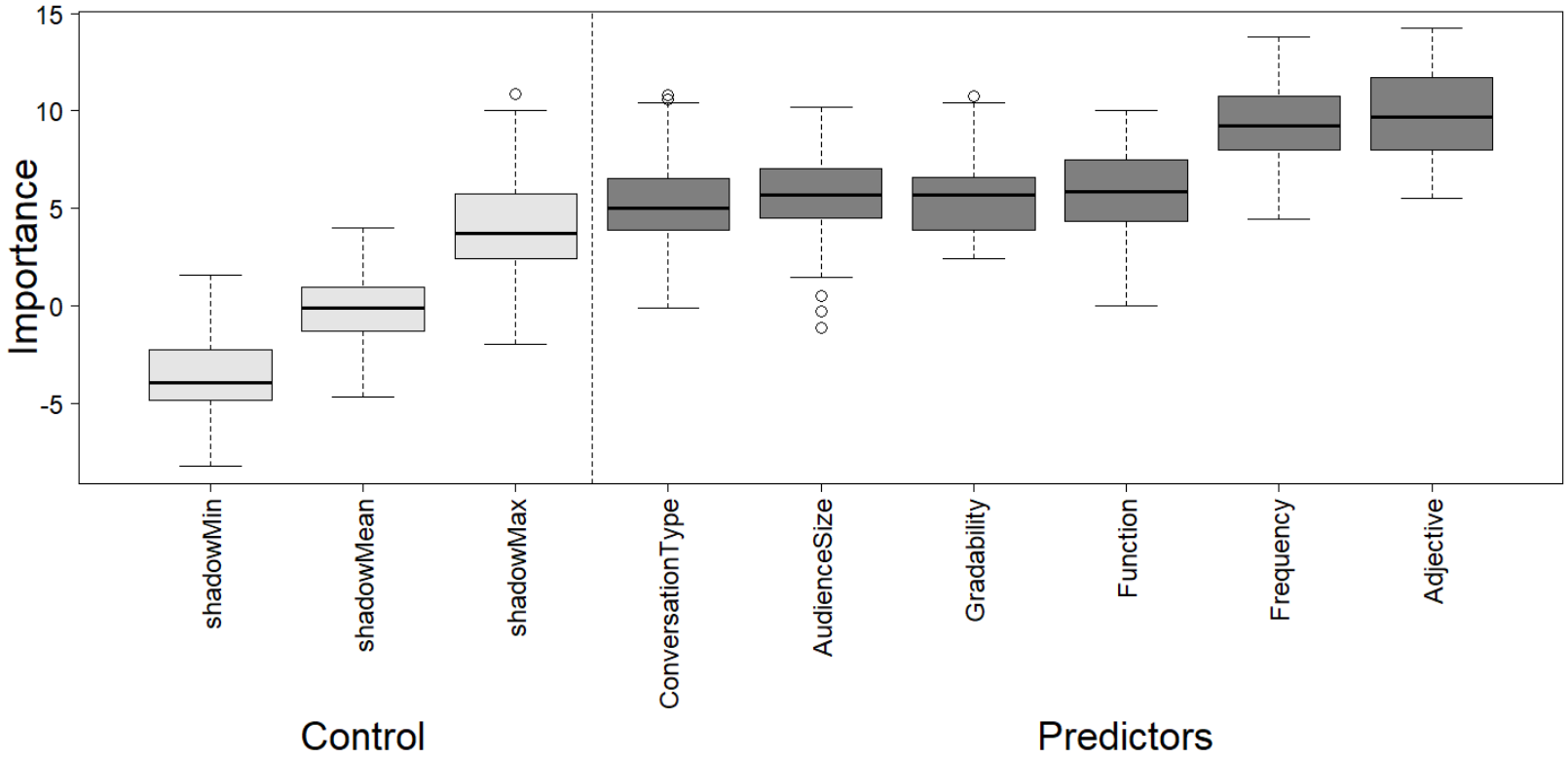

Figure 6: Predictor Strength based on Boruta Feature Selection

Mixed-Effects Binomial Logistic Regression

(Baayen 2008; Faraway 2016)

Why MEBLoR?

- Standard models for multivariate analyses
- Can handle nested/grouped data
- Can handle multicollinearity

What is MEBLoR?

- Evaluates the impact of various variables (and interactions) on dependent variable

Problems of MEBLoR

- Cannot handle small data sets (well)

Mixed-Effects Binomial Logistic Regression

(Baayen 2008; Faraway 2016)

	Group(s)	Variance	Std. Dev.	L.R. χ^2	DF	Significance (p)
Random Effect(s)	Adjective	0	0	11.66	1	<.001***
Fixed Effect(s)	**Estimate**	**VIF**	**OddsRatio**	**Std. Error**	**z value**	**Significance (p)**
(Intercept)	-0.57		0.57	0.16	-3.49	<.001***
Gender(Men)	-0.88	1.02	0.41	0.30	-2.99	<.01 **
Frequency	0.06	1.02	1.06	0.01	4.11	<.001***
Model statistics						**Value**
Number of Groups						6
Number of cases in model						314
Observed successes						129
Residual deviance						399.78
Pseudo-R^2 (Nagelkerke)						0.11
C						0.649
Somers' D_{xy}						0.298
AIC (BIC)						407.78 (422.78)
Prediction accuracy						64.33%
Model Likelihood Ratio Test			L.R. χ^2	25.48	DF(3)	<.001***

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Discussion & Outlook

Summary

Analysis suggests that successful variants collocate with. . .

(a) few adjective types (low LD, Boruta, MEBLoR) but

(b) frequent adjectives (Boruta, MEBLoR)

- CCA: attraction between *good* and *really* highest among youngest speakers
- CCA: rejection between other adjs. and *really* lowest among youngest speakers.

	Lexical Diversity	**Coll. Strength (with HFAs)**
H1 (bleaching/broadening)	high ✗	weak ✗
H2 (specialization)	low ✓	strong ✓

Discussion

- In the AusE amplifier system, the innovative variant (*really*) successfully replaced the dominant form (*very*) because the innovative variant collocated strongly with HFAs.
- There are no signs that *really* experienced a broadening before taking over the system.
- Rather, the findings suggest that the broadening happens once a variant has already become dominant (substantiates Tagliamonte and Denis 2014)

Argument

1. The co-occurrence with HFAs lead to the innovative variant being used as a more expressive variant to amplify certain HFAs.
2. The frequency of the innovative form increased because it piggybacked on the frequency of the HFA.
3. Increase in use $\rightarrow$ more deeply entrenched.
4. Deeper entrenchment $\rightarrow$ increased ease of retrieval.
5. Higher ease of retrieval $\rightarrow$ advantage over rival variants.
6. Innovative variant broadens because it increasingly co-occurs with more adj. types.

Outlook

Could this be a universal mechanism?

- Test if the mechanisms can be shown to have worked in analogous changes in English
  3^{rd} p. sg. ind. morpheme: <eth> → <(e)s>
- Test if the mechanisms can be shown to have worked in analogous changes in languages other than English

Thank you so, really, very much!

Acknowledgements

I would like to thank...

Pam Peters and Adam Smith
for providing me with a preliminary version of ICE-Aus
(without them the current study would not have been possible)

my colleagues at UQ

for comments and their feedback on earlier versions of this talk

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Appendix

Lexical Diversity

$$LD = \frac{N_{Adj.\,Types}}{N_{Amp.\,Tokens}}$$

Example

Amplifier	Amp. Tokens	Adj. Types	Calculation	LD value
variant$_A$	10	1	$\frac{1}{10}$	.1
variant$_B$	10	5	$\frac{5}{10}$	.5
variant$_C$	10	10	$\frac{10}{10}$	1
very	67	12	$\frac{12}{67}$	.18
pretty	37	12	$\frac{12}{37}$	.32
bloody	2	1	$\frac{1}{2}$	.50

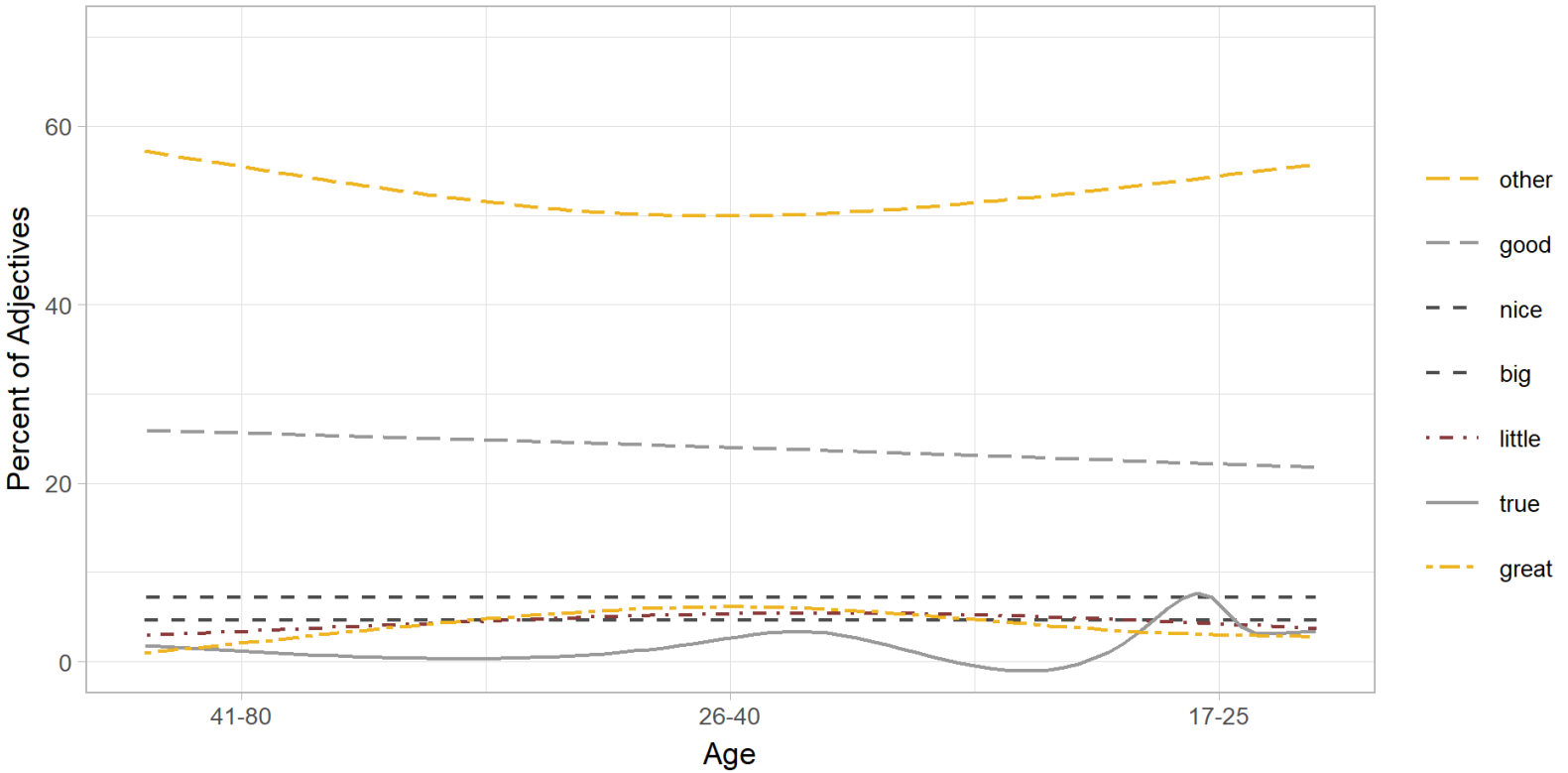

Figure 7: Distribution of adjective types across apparent time.

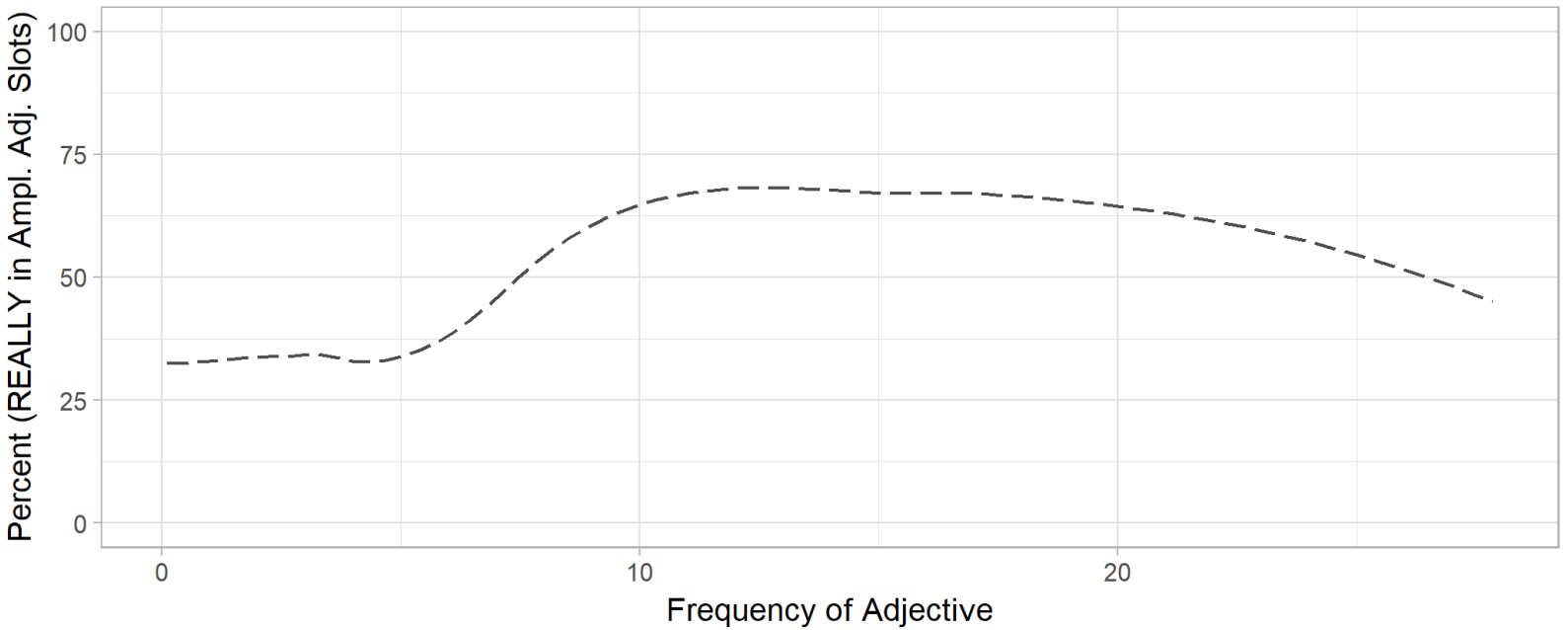

Figure 8: Percent of *really* by frequency of adjective.