

Modelling (dia)lectal coherence across time: Exploring the relationship between lifespan and community change in Swabian

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Research Background

- “Idiolects do not provide the basis for self-contained or internally consistent grammars” (Weinreich, Labov, and Herzog 1968:188) .
- It is the grammar of the speech community, governed by social factors, that reflects regularity and coherence and where linguistic change occurs.
- Can individual lifespan trajectories “speed up” or “slow down” a community change in progress (Wagner & Buchstaller 2017)

Research Questions

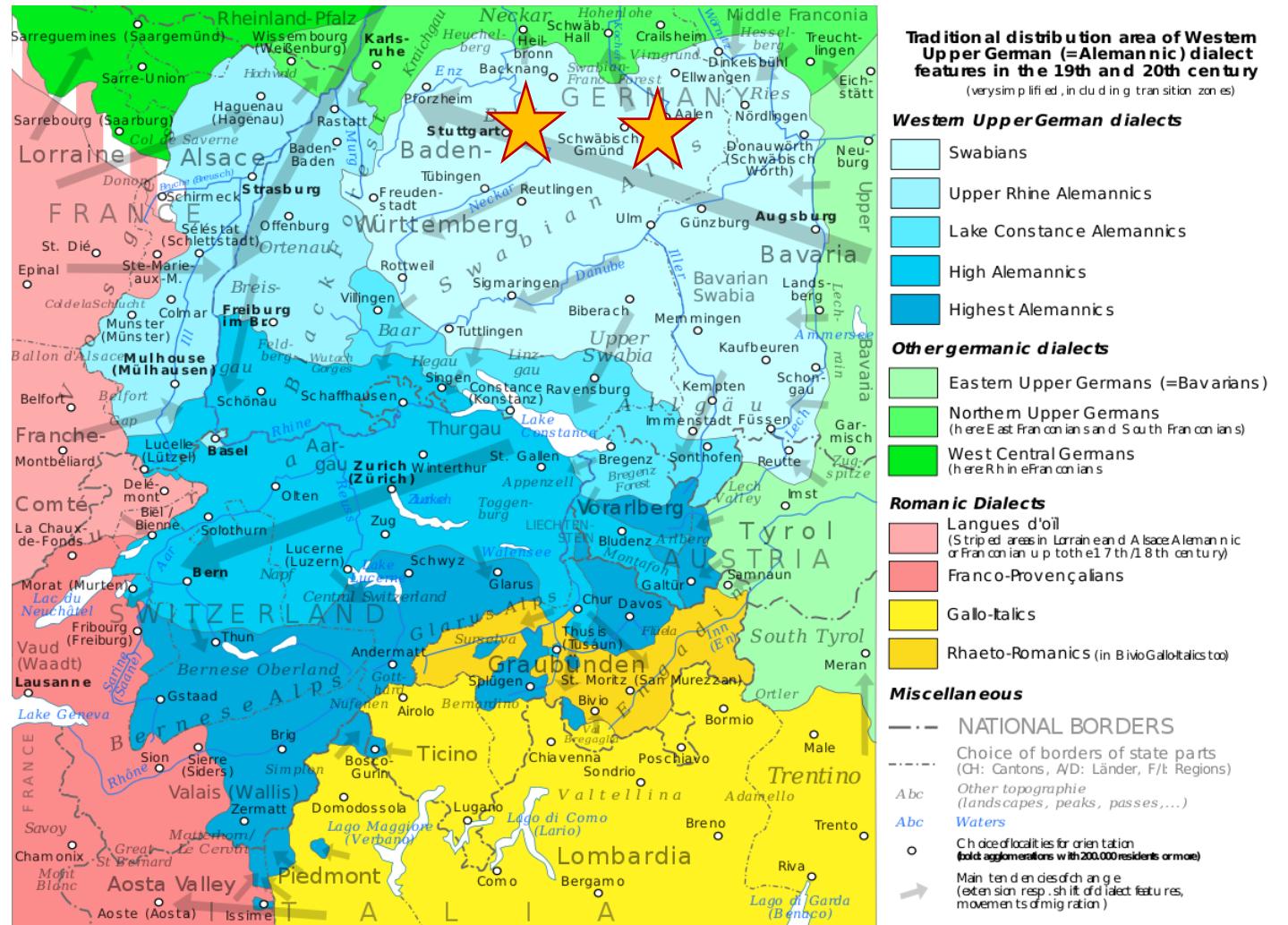
- How well do the grammars of individuals and the grammars of the community cohere or “behave in parallel”? (Guy & Hinskens 2006)
- Does coherence act as a restraint or “gate-keeper” on language change? Are “less coherent” lects more susceptible to variation and change while “more coherent” lects are less vulnerable?
- What theoretical models are suitable for exploring linguistic coherence across the lifespan?

Swabian

Swabian or Schwäbisch is a High German dialect, belonging to the Alemannic family, spoken by just over 800,000 people.

Two communities:

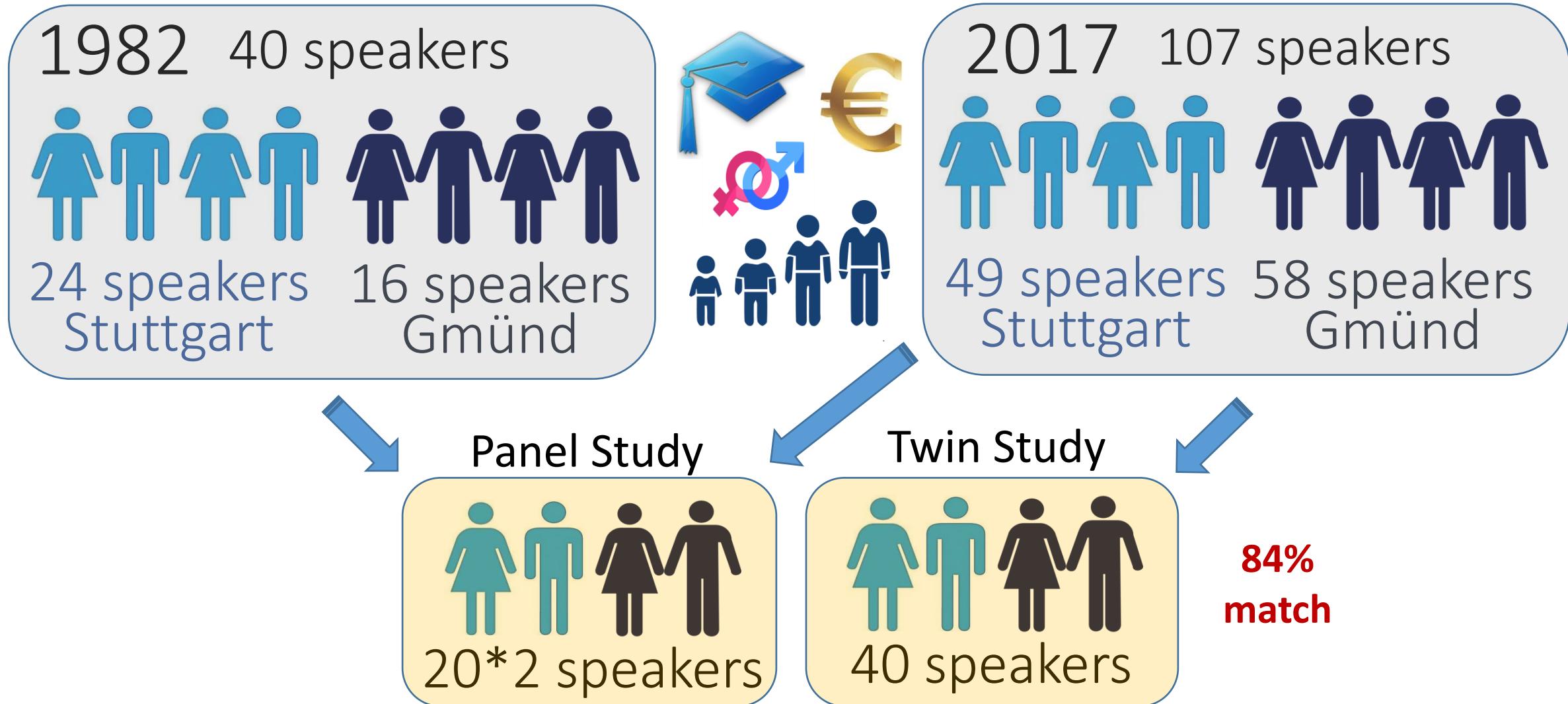
- Stuttgart area
- Schwäbisch Gmünd



Two Speech Communities



Swabian Corpus



40 Panel Speakers and 40 Twin Speakers

PANEL STUDY (real-time)

Stuttgart

Age Group	No Abitur		Abitur		Total
	M	W	M	W	
Older	0	1	4	1	6
Younger	0	1	0	0	1
TOTAL	0	2	4	1	7

TWIN STUDY (apparent-time)

Stuttgart

Age Group	No Abitur		Abitur		Total
	M	W	M	W	
Older	0	1	0	0	1
Younger	3	3	5	2	13
TOTAL	3	4	5	2	14

Schwäbisch Gmünd

Age Group	No Abitur		Abitur		Total
	M	W	M	W	
Older	1	2	0	0	3
Younger	0	1	6	3	10
TOTAL	1	3	6	3	13

Schwäbisch Gmünd

Age Group	No Abitur		Abitur		Total
	M	W	M	W	
Older	1	2	1	1	5
Younger	5	4	7	5	21
TOTAL	6	6	8	6	26

Data and Methods

- ***Sociolinguistic Interviews***
 - Labovian-style, casual interview questions of approximately one hour
 - Same interview instrument and techniques used in 1982 and 2017
 - Similar interview situations, albeit different interviewers
- ***Social Predictors***
 - Recording Year (1982/2017)
 - Community (Schwäbisch Gmünd/Stuttgart)

Linguistic Variables – Phonological (10)

Code	Variable Name	SWG~STD (Example)	Type	Salient	Stigma	Swabian Examples
PHONOLOGICAL VARIABLES:						
AIS1	MHG /i:/ Diphthong [əi ~ ai] SWG ~ STD: [əɪ] ~ [aɪ]	<i>Dēig</i> ~ <i>Teig</i> 'dough'	SWG	low	low	<i>da dued mā in den Zylinder obe der Dēig nei</i> 'then you put [it] into the cylinder above the dough'
AIS2	MHG /ei/ Diphthong [ɔi ~ ai] SWG ~ STD: [ɔɪ] ~ [aɪ]	<i>klōi</i> ~ <i>klein</i> 'not a'	SWG	high	high	<i>mā brauchd da kōi Flōisch dazue</i> 'you don't need any meat with it'
ANN	Nasal 'a' before 'n' [ā ~ an] SWG ~ STD: [ä] ~ [an]	<i>mā</i> ~ <i>man</i> 'one'	SWG	high	high	<i>mā kā es mit em normale [Mehl] mache</i> 'you can make it with a normal [flour]'
FRV1	Unrounded Front Vowel [e: ~ ø:] SWG ~ STD: [ɛ] ~ [ø]	<i>meeglich</i> ~ <i>möglich</i> 'possible'	SWG	low	low	<i>so guet wie meeglich probier es</i> 'as good as possible [I] try it'
FRV2	Unrounded Diphthong [ai ~ ɔɪ] SWG ~ STD: [aɪ] ~ [ɔɪ]	<i>Fraind</i> ~ <i>Freund</i> 'friend'	SWG	low	low	<i>bin gern auf Baim gestiege</i> '[I] liked to climb trees'
FRV3	Unrounded Front Vowel [iə ~ y:] SWG ~ STD: [iə] ~ [y]	<i>Kiiche</i> ~ <i>Küche</i> 'kitchen'	SWG	low	low	<i>dann ist d Kieche explodiert</i> 'then the kitchen exploded'
FRV4	MHG /uo/ Diphthong [uə ~ u:] SWG ~ STD: [uə] ~ [u]	<i>muess</i> ~ <i>muss</i> 'must'	SWG	low	low	<i>nā muess er sueche</i> 'then he has to look'
LEO	Lower Long Vowel [ɛ: ~ e:] SWG ~ STD: [ɛ:] ~ [e:]	<i>lääbe</i> ~ <i>leben</i> 'live'	REG	low	low	<i>dā e baar Jähr lääbe</i> 'live a few years there'
SFV	Stop-Fricative Variation [tç ~ t̪k] SWG ~ STD: [t̪k] ~ [tç]	<i>richtich</i> ~ <i>richtig</i> 'correct'	REG	low	low	<i>scho richtich, wo andersch verkaufe au</i> 'already right where others sell also'
STP	Palatal Coda -st [ʃ ~ s] SWG ~ STD: [ʃt] ~ [st]	<i>darfsch</i> ~ <i>darfst</i> 'allow'	ALM	high	low	<i>da darfsch ja bloß hundertdreißig fahre in Italien</i> 'then you're only allowed to drive 130 in Italy'

Linguistic Variables – Morphosyntactic (10)

Code	Variable Name	SWG~STD (Example)	Type	Salient	Stigma	Swabian Examples
MORPHOSYNTACTIC VARIABLES:						
DAS	Definite Neuter Article: des ~ das	des ~ das SWG ~ STD: [d̥es] ~ [das]	REG	high	low	<i>kennsch des?</i> 'do you know that?'
EDP	Plural Verb Inflection: -ed ~ -en	finded ~ finden SWG ~ STD: [əd̥] ~ [ən̥]	SWG	high	low	<i>die finded es wichtig</i> 'they think it important'
IRV1	Irregular Verb: gange ~ gehen	gange ~ gehen SWG ~ STD: [gango̯] ~ [ge:ən̥]	SWG	high	high	<i>willsch du an Telefon gange</i> 'do you want to answer the telephone'
IRV2	Irregular Verb: stande ~ stehēn	stande ~ stehēn SWG ~ STD: [ʃtandə] ~ [ʃte:ən̥]	SWG	high	high	<i>lässt mā no e halb Stunde stande</i> 'you let [it] sit for a half hour'
IRV3	Irregular Verb: hen ~ haben	hen ~ haben SWG ~ STD: [hən̥] ~ [ha:bən̥]	SWG	low	low	<i>mr hen e aldes Haus khet</i> 'we have had an old house'
NEG	Negative Marker: ned ~ nich(t)	nedde/ed ~ nicht SWG ~ STD: [nedə]/[ed̥] ~ [nɪçt̥]	REG	high	low	<i>glaub mā et ge?</i> 'you don't believe [it] eh?'
PVB	Periphrastic Subj: dääd ~ würde	dääde ~ würde SWG ~ STD: [dædə] ~ [vʁuðə]	REG	low	low	<i>es dääd beeinflusse</i> 'it should influence'
SAF1	Swabian Affix: -le ~ -chen	Mädle ~ Mädchen SWG ~ STD: [lə] ~ [çən̥/laɪ̯n̥]	ALM	high	low	<i>dass er en Mädle māg un se ihn māg</i> 'that he likes a girl and she likes him'
SAF3	Swabian Affix: nää- ~ hin-	nääkriegt ~ hinkriegt SWG ~ STD: [nɔ̯] ~ [hɪn̥]	SWG	low	high	<i>nā verzählet se was se so im Gschäft erlebet</i> 'then they explain what they experienced at work'
SAF5	Swabian Affix: Ø ~ ge-	[ge]baut ~ gebaut SWG ~ STD: [θ̥] ~ [gə]	REG	low	low	<i>un hen hier e Haus [ge]baut</i> 'and they have built a house here'

Dialect Density Index (DDI)

- Token-based composite measure which represents the concentration of dialect variants in speakers' repertoires
- Calculated as the total dialect variants divided by the total variants

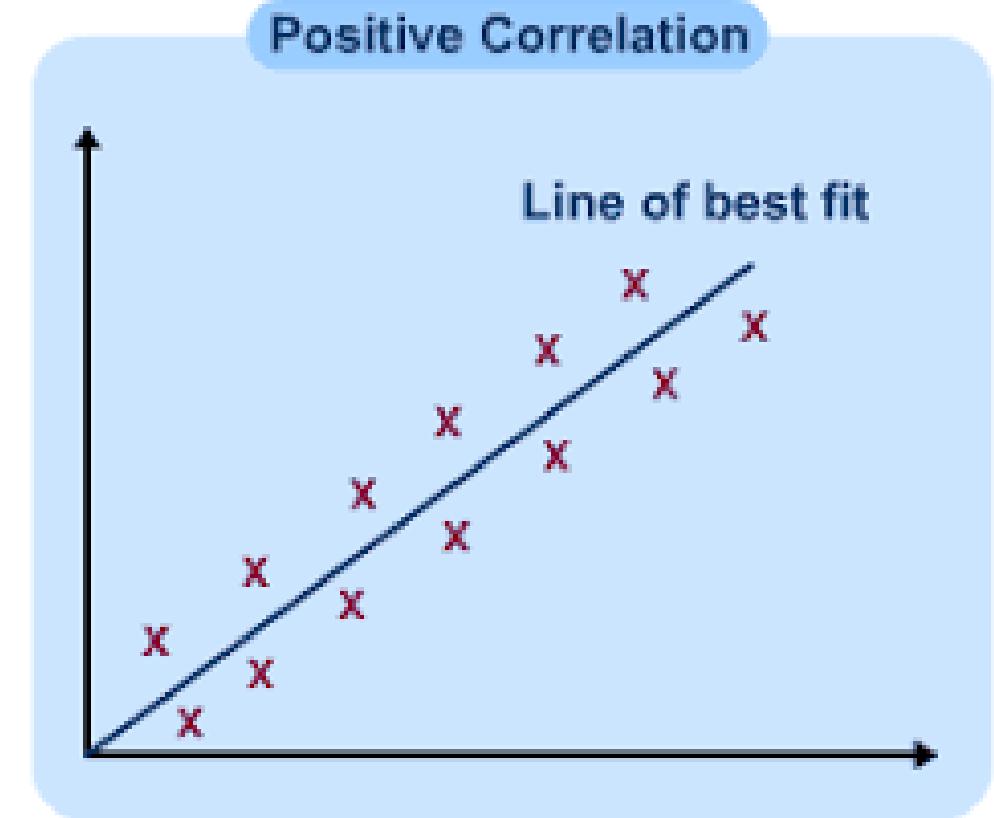
(Van Hofwegen & Wolfram 2010; Oetting & McDonald 2002)

Four Methods to Evaluate Coherence

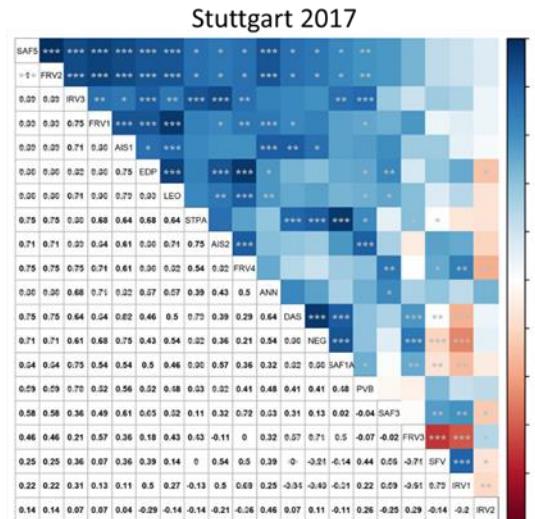
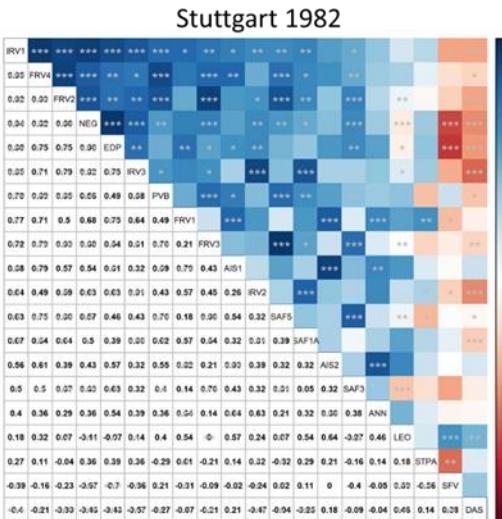
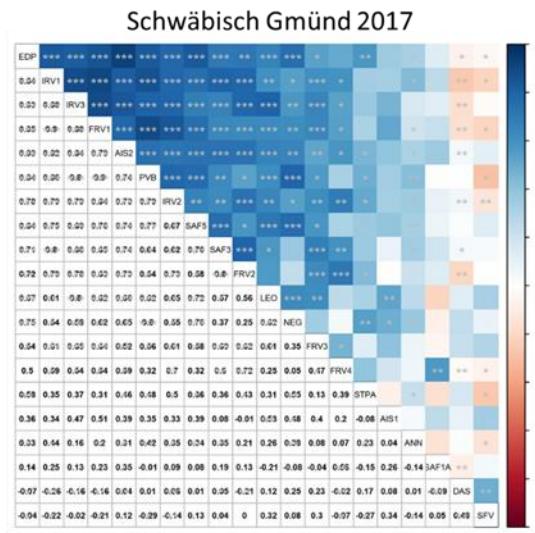
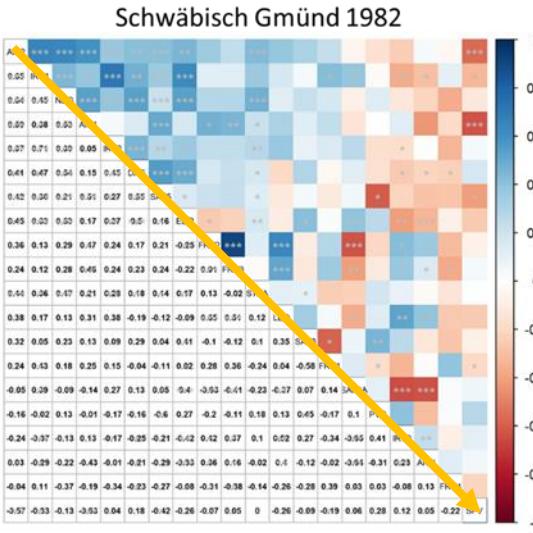
1. Correlation Analysis
2. Multiple Regression Analysis
3. Principal Components Analysis
4. Lectal Lattice

1. Correlational Analysis

- Evaluates the strength of the relationship between two or more numerically measured, continuous variables (e.g., age and dialect usage)
- Particularly useful for establishing significant connections between variables
- Cannot be used to draw inferences about the relationships among the variables

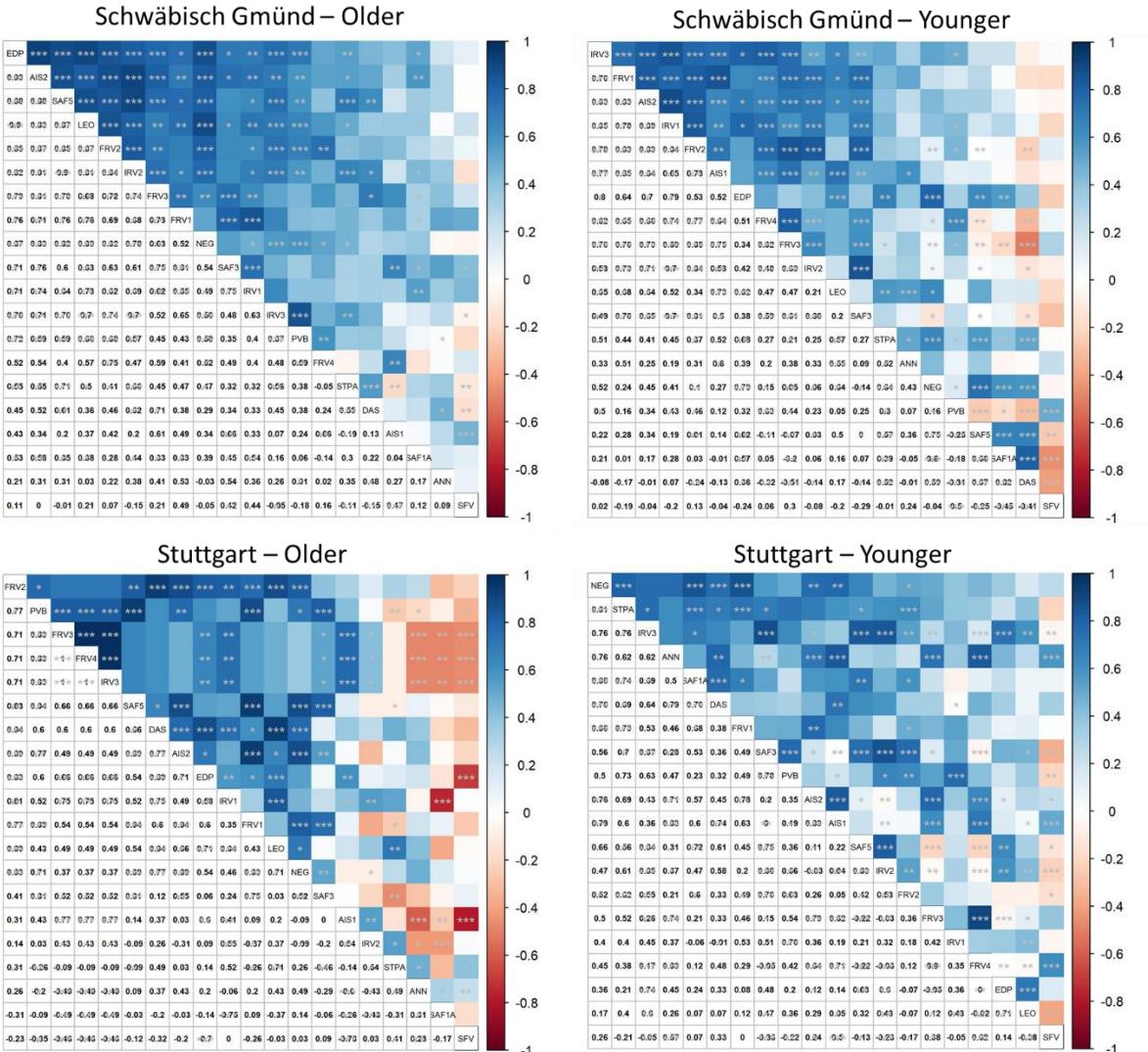


1. Correlational Analysis – Panel Study (real-time)



Correlation Metrics	Schwäbisch Gmünd		Stuttgart	
	1982	2017	1982	2017
Dialect Density Index (DDI)	61.2%	47.4%	47.9%	26.6%
Percent of Significant Pairs	39.0% (74/190)	51.0% (97/190)	63.7% (121/190)	50.5% (96/190)
Correlation Mean (\bar{x})	.302	.500	.468	.543
Correlation Standard Deviation (σ)	.360	.400	.334	.359
Correlation Median (\tilde{x})	.130	.464	.484	.557
Proportion of Variance (PC1-PC3)	.542	.865	.744	.857
Steiger X^2 Test of Significance	237.56	557.32	899.09	559.67
Steiger X^2 Significance Level	**	***	***	***

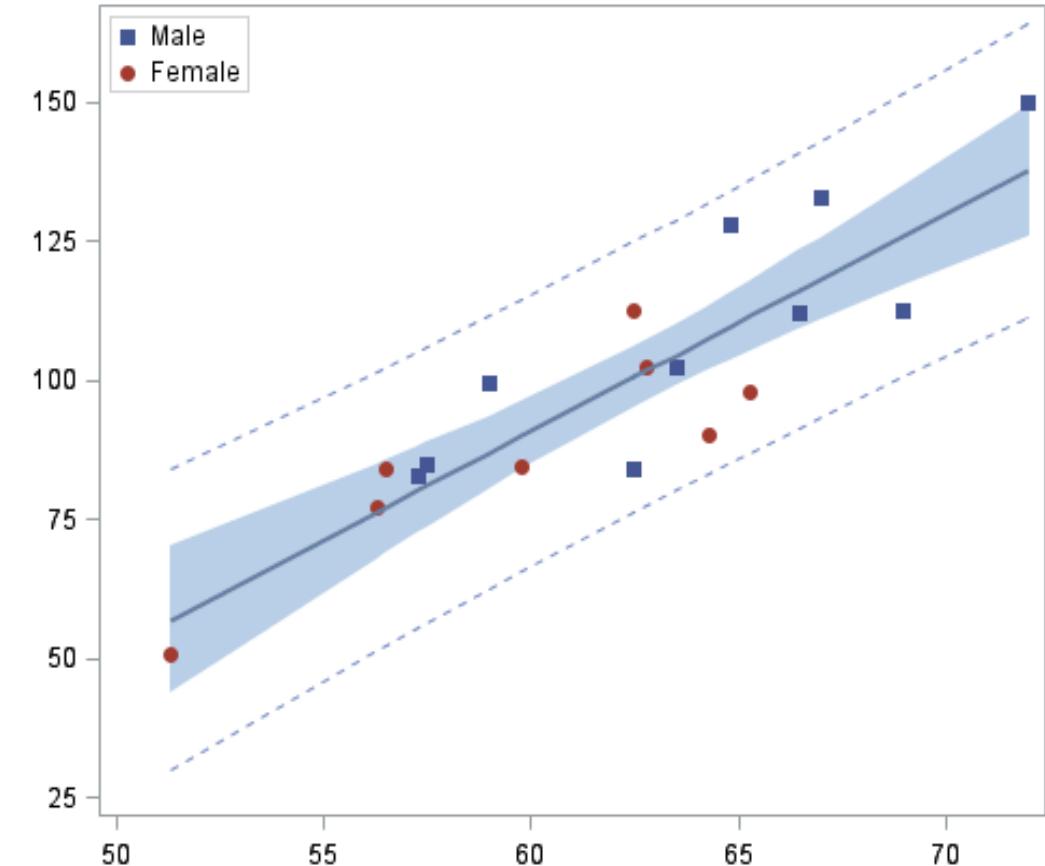
1. Correlational Analysis – Twin Study (apparent-time)



Correlation Metrics	Schwäbisch Gmünd		Stuttgart	
	Older	Younger	Older	Younger
Dialect Density Index (DDI)	44.4%	41.8%	45.1%	20.5%
Percent of Significant Pairs	51.6% (98/190)	55.3% (105/190)	48.9% (93/190)	47.9% (91/190)
Correlation Mean (\bar{x})	.526	.449	.498	.462
Correlation Standard Deviation (σ)	.283	.356	.455	.312
Correlation Median (\tilde{x})	.534	.438	.486	.454
Proportion of Variance (PC1-PC3)	.764	.790	.888	.783
Steiger X ² Test of Significance	1215.32	645.04	314.31	405.44
Steiger X ² Significance Level	***	***	***	***

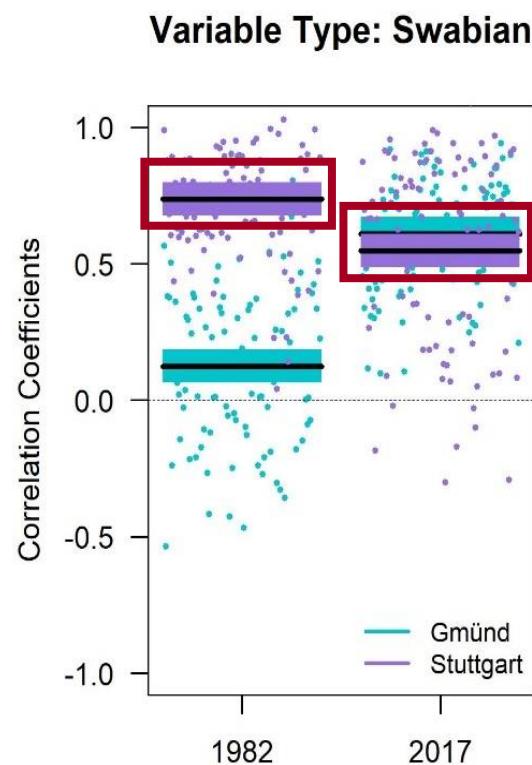
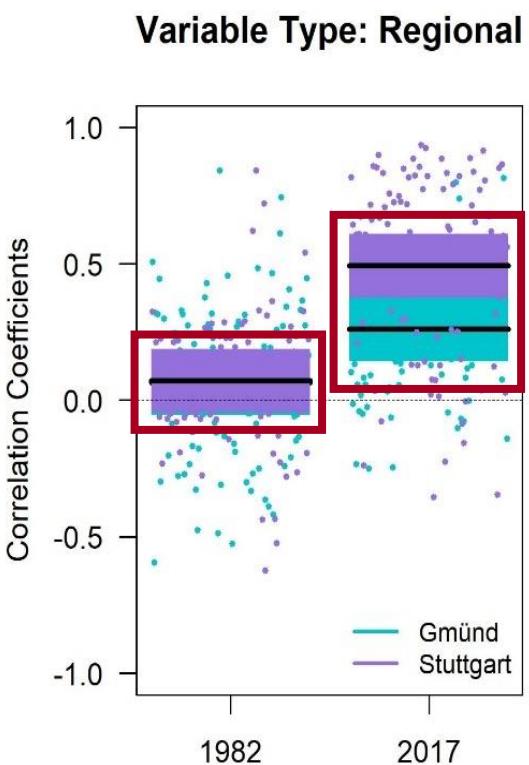
2. Multiple Regression Analysis

- Estimates the relationship between a single dependent variable and one or more independent (or predictor) variables
- linear regression for numeric variables, such as speaker age, percent dialect use,
- logistic regression for classes of events, such as speaker sex, age group, socio-demographic class

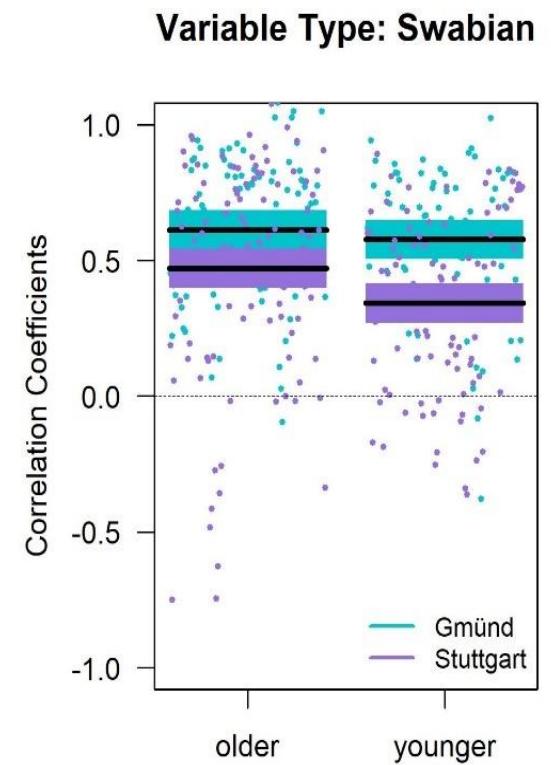
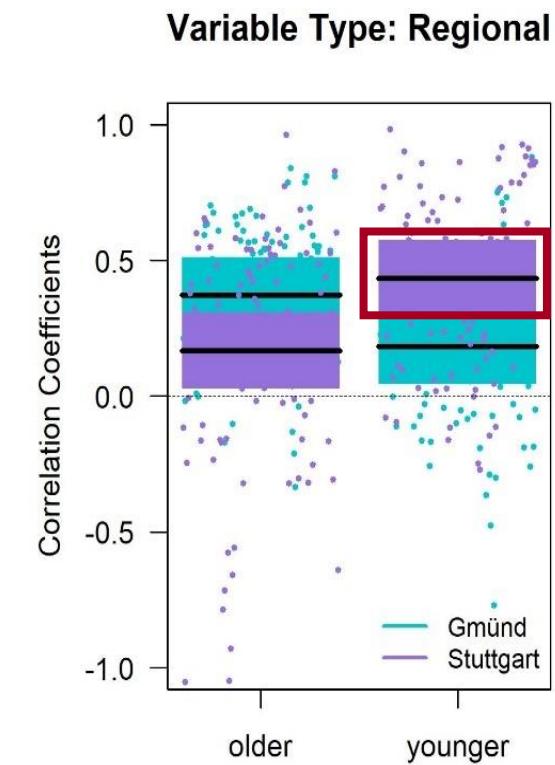


2. Multivariate Analysis

PANEL STUDY (real-time)



TWIN STUDY (apparent-time)

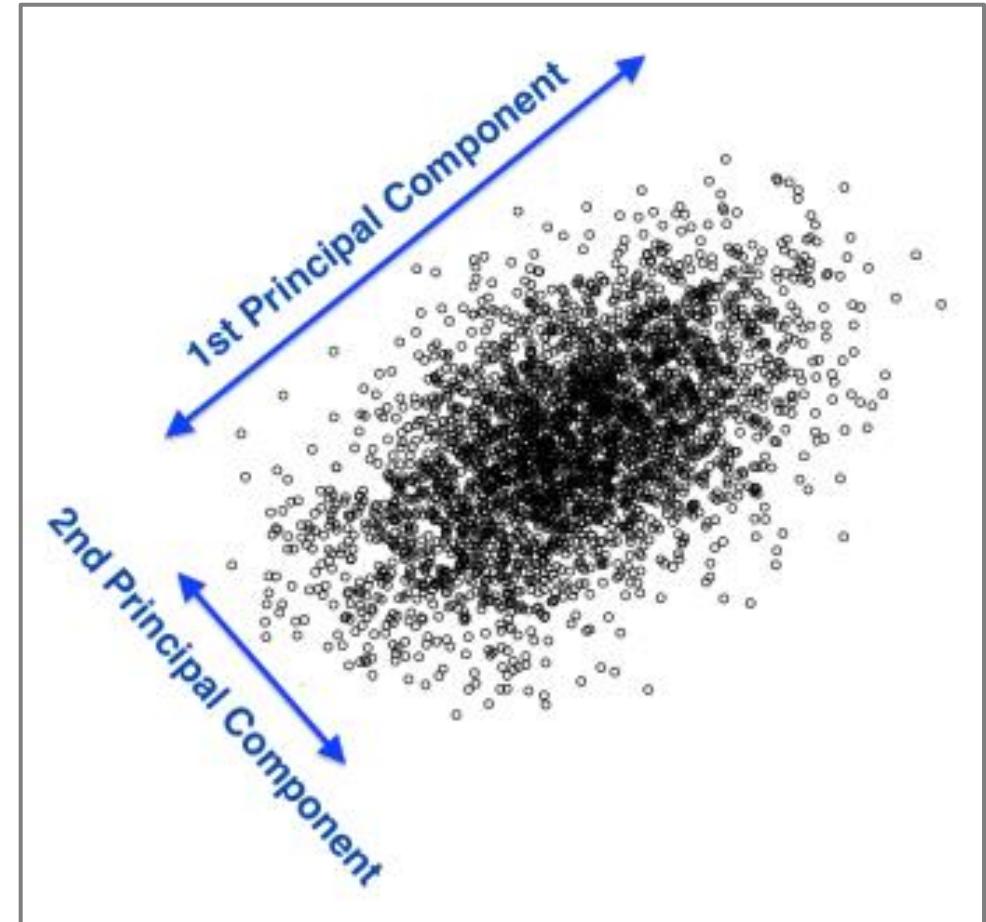


Coefficients	Estimate	Std.Error	t-value	p-value	sig
Stuttgart : Type Swabian	0.604422	0.094787	6.377	5.15e-10	***
2017 : Type Swabian	0.289227	0.094787	3.051	0.00243	**
Stuttgart : 2017 : Swabian	-0.898896	0.134049	-6.706	7.10e-11	***

Coefficients	Estimate	Std.Error	t-value	p-value	sig
Stuttgart: Type Swabian	0.06273	0.11332	0.554	0.580187	
Younger : Type Swabian	0.15281	0.11332	1.348	0.178289	
Stuttgart : younger : Swabian	-0.54599	0.16026	-3.407	0.000726	***

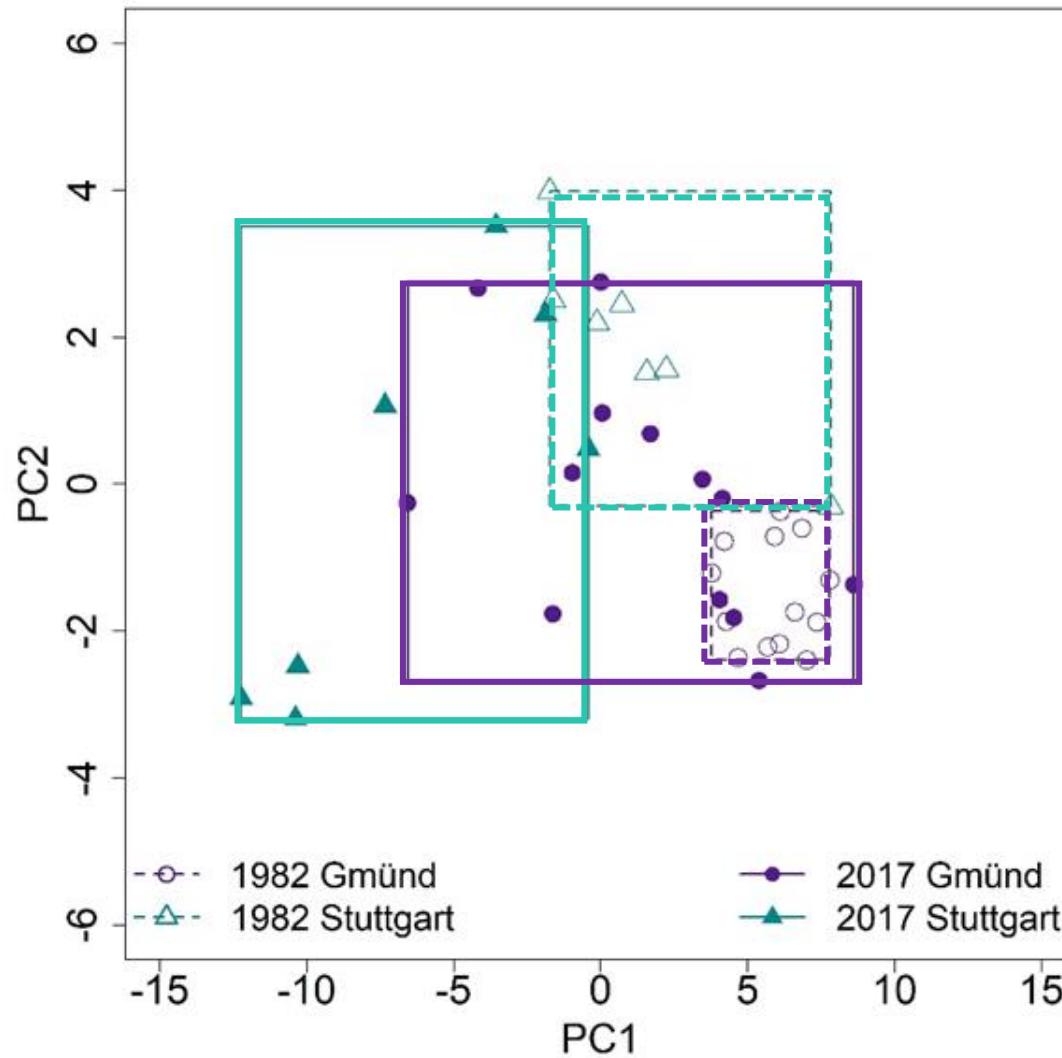
3. Principal Components Analysis (PCA)

- reduces the dimensionality of the data, through orthogonal transformations, such that
 - the greatest variance lies on the first principal component,
 - the second greatest variance on the second principal component,
 - and so on.

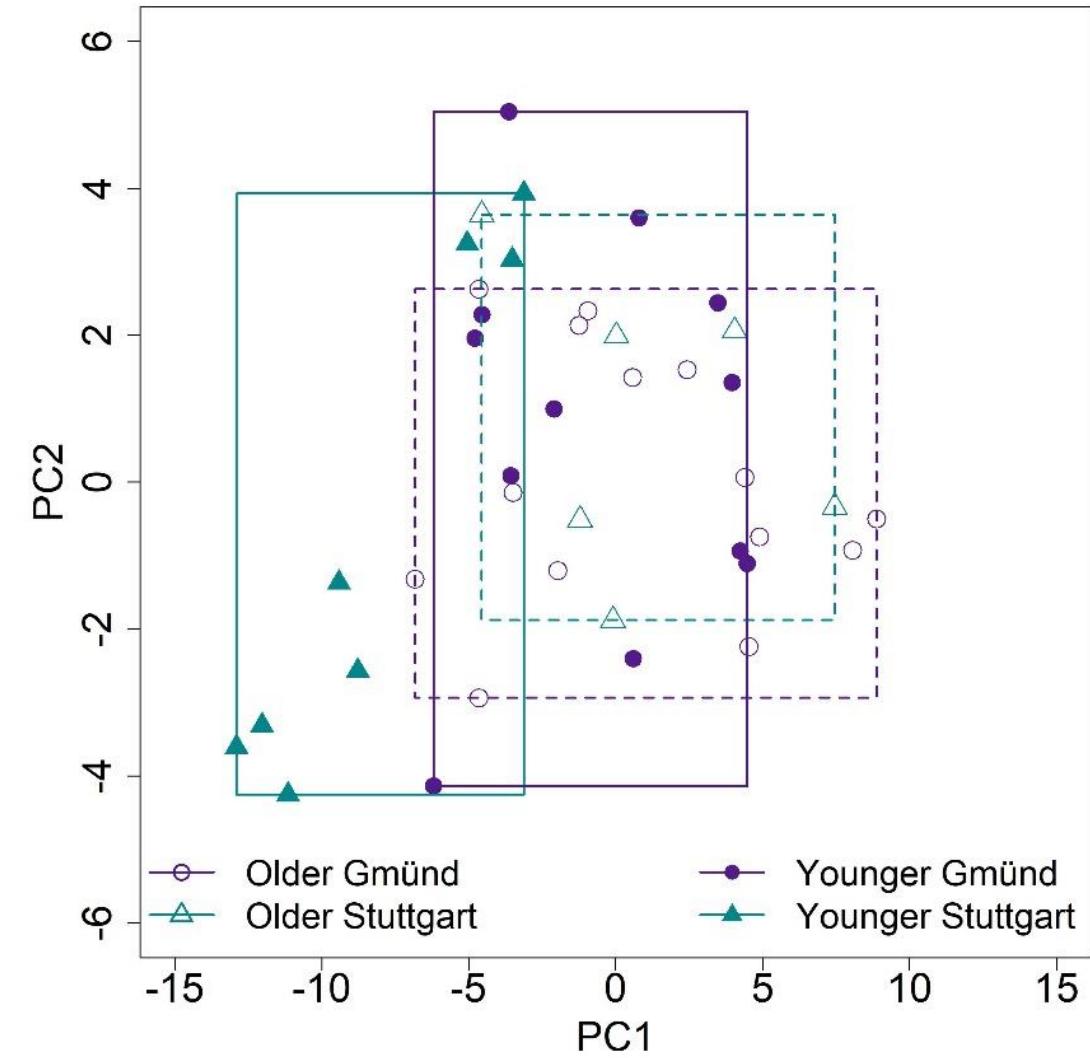


3. Principal Components Analysis (PCA)

PANEL STUDY (real-time)

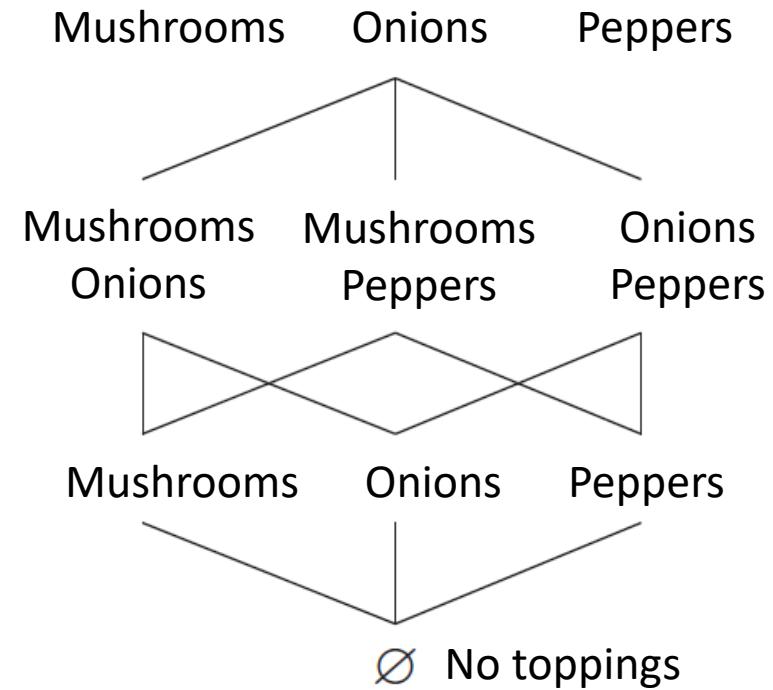


TWIN STUDY (apparent-time)



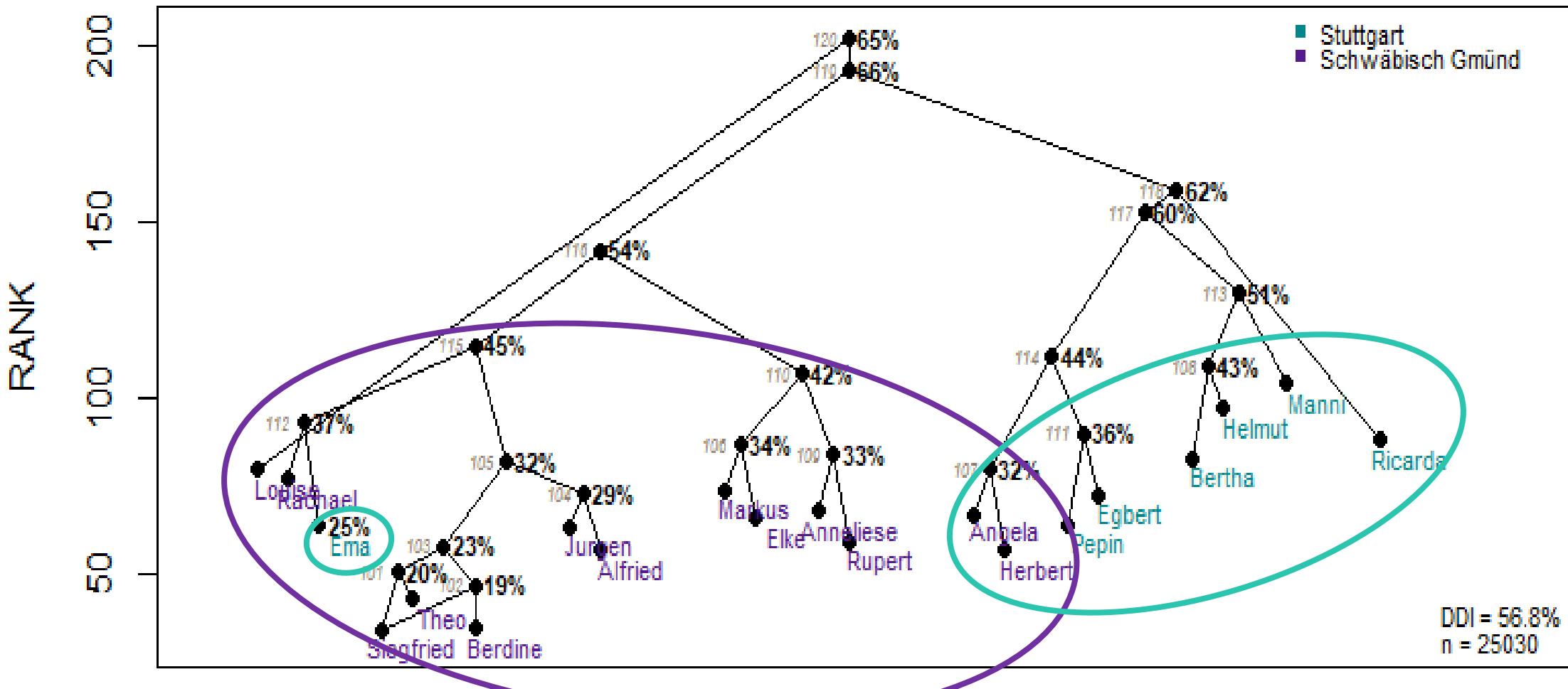
4. The Lectal Lattice

- Draws from order theory of mathematics and abstract algebra
- Uses binary relations to examine the hierarchical or implicational relationships within a given set of elements

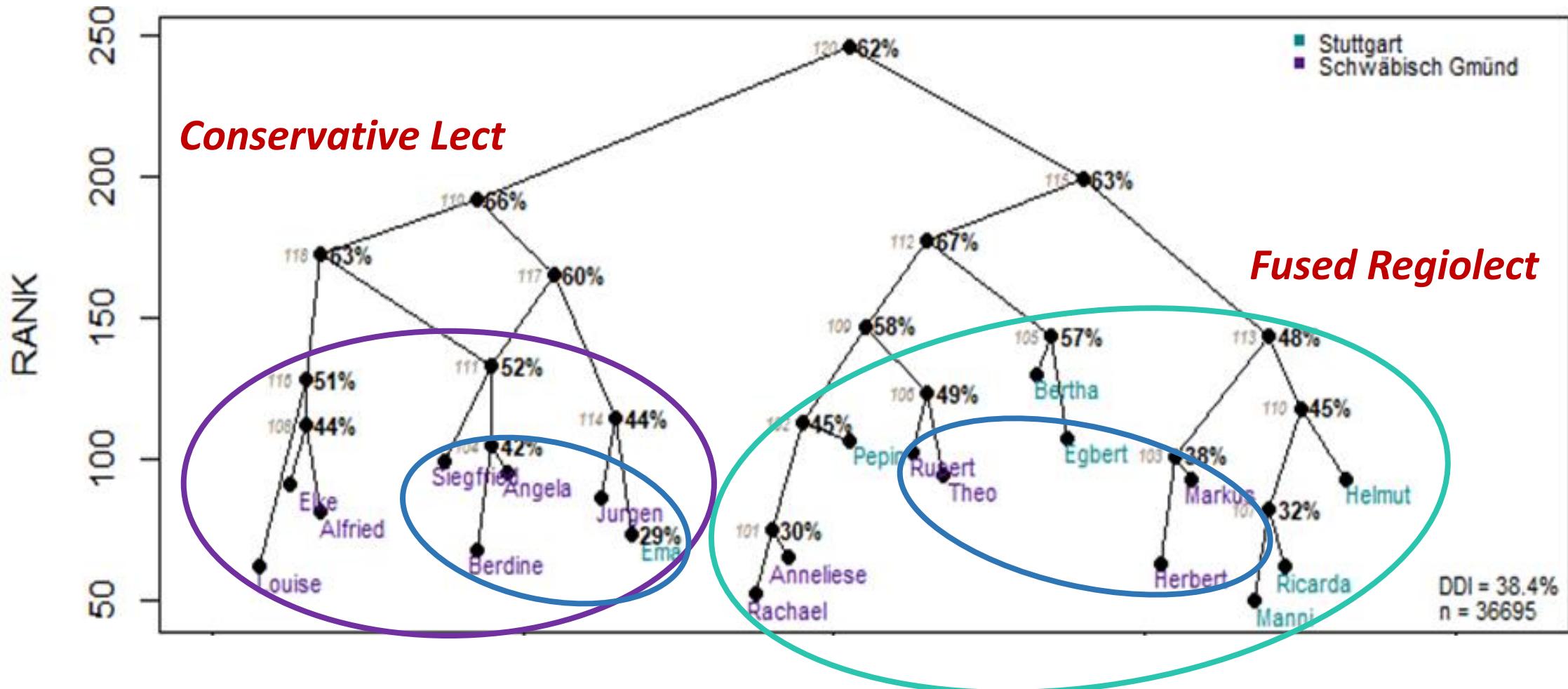


Adapted from Daniel Harbour (2014)

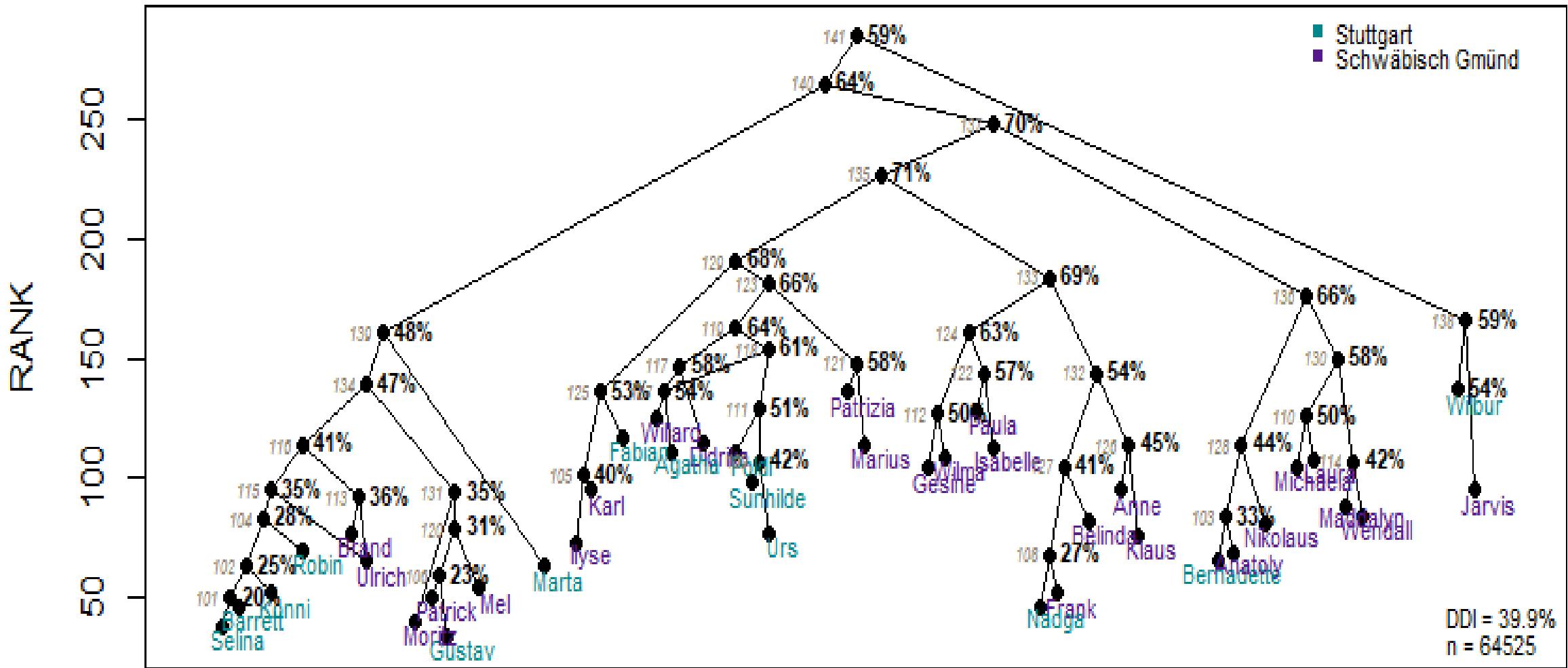
4. Lectal Lattice – Panel Study 1982



4. Lectal Lattice – Panel Study 2017



4. Lectal Lattice – Twin Study 2017



4. Lattice Lectal – Implicational Coherence

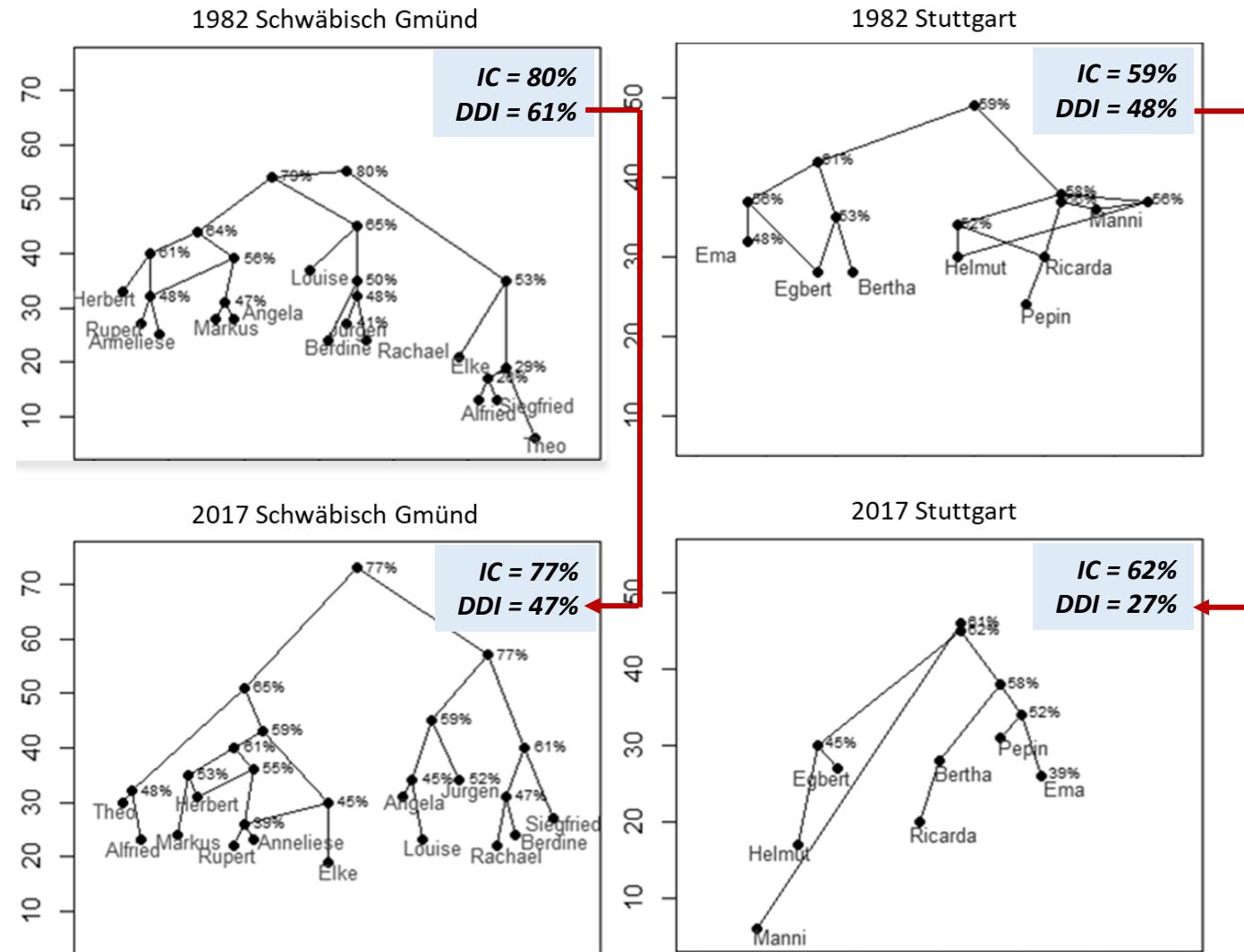
- Assesses the level of coherence in a lect by calculating the number of significant pairwise comparisons that follow the implicational pattern
- Provides a method to assess whether more coherent lects are less susceptible to change and, conversely, whether less coherent lects are more vulnerable to change

$$IC = \frac{\sum_{i=1}^n x_i^\omega - \sum_{i=1}^n x_i^\beta}{\sum_{i=1}^n x_i^i}$$

$$.82 = \frac{60 - 6}{66}$$

4. Lectal Lattice – Implicational Coherence

- Offers the greatest explanatory value by depicting the patterns of significant relationships between variables
- Provides a method to test the premise that less coherent lects are more likely to change, providing insight into the actuation of change



Closing Remarks

- There is no silver bullet for assessing sociolinguistic coherence
- Lectal lattice yields a model that visually illustrates how close (or distant) individuals lects are from one another
- Its multidimensional aspect renders a single visualisation that unveils the logical groupings and hierarchical orderings of similar lects.
- The Lectal Lattice offers a technique for investigating the premise that less coherent lects are more vulnerable to change by comparing coherence levels across lects.
- The Lectal Lattice supports Weinreich, Labov, and Herzog's (1968) contention that coherence or “orderly heterogeneity” is found in the aggregate grammar of the speech community

Thank you

CONTACT INFORMATION

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