Structural Equation Modelling with lavaan
An Application on Electoral Choice

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The Boring Outline (Content is more fun)
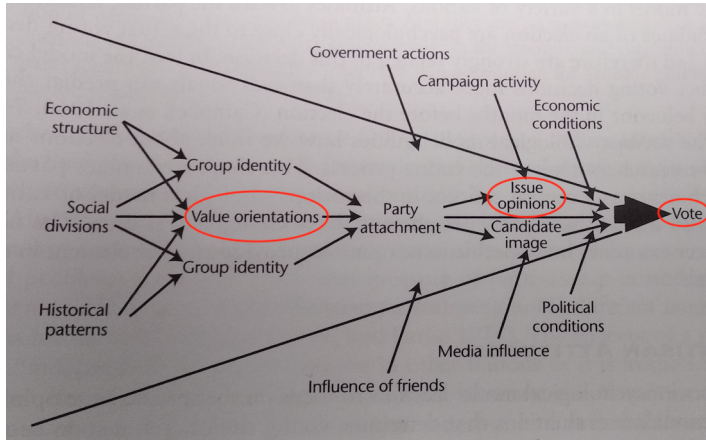
Electoral Behaviour

- Political Behaviour -> How do individuals make political decisions? Why do they behave in the way they do?
- Masses vs. elites.
- Electoral behaviour: who gets out to vote, who votes for which party...
- Mainly survey data. Dimensionality reduction and discrete choice modelling.

In a Nutshell

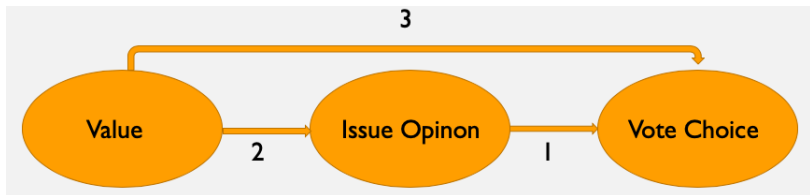**Do personal values influence political choice?**

- (Caprara et al. 2006) -> Yes, fundamental. (Italy)
- (Leimgruber, 2011) -> Yes, but only indirect and mediated through political values and attitudes. (Swiss)
- Marc and Ugur -> The significance and the strength of the direct and mediated relationships between personal values and political choice vary among different voter bases. These differences have theoretically important implications regarding to the nature of party-voter linkages for different parties and the space on which electoral competition is taking place. (Germany)

The Funnel of Causality

Source: Dalton, Russel. *Citizen Politics*. CQ Press. 2008

The Main Idea

Direct and Indirect Effects

Theory of Basic Human Values

Context: 2017 German Elections

- Dependent Variable: Party Choice (Coded binary
    1. Christian Democratic Union **(CDU/CSU)**: Conservative catch-all party (33%)
    2. Social Democratic Party **(SPD)**: Social democratic catch-all party (21%)
    3. Alternative for Germany **(AfD)**: New far-right party, against immigration, had already been successful in regional state elections (12%)
    4. Free Democratic Party **(FDP)**: Smaller liberal party, not represented in parliament between 2013 and 2017 (11%)
    5. The **Left**: Smaller left-wing party (9%)
    6. **Greens**: Well, greens (9%)

Data: The German Longitudinal Election Study

- Mass survey for political behaviour in Germany, first conducted prior to 2009 elections
- Data for 2017 elections: Short-term Campaign Panel 2017 from 6/10/2016 to 26/03/2018 (N=18.561)
- Online-survey; partially participation recruiting via telephone
- We use the 1st wave (06.10.2016 – 10.11.2016) which contains Schwartz value questions, issue opinions and vote preference (N=18079)

Data: Value Questions

- In the following, people are described regarding what it's important for them. Please assess how similar or dissimilar the described person is to you.
    - 1 the person isn't like me
    - 2
    - 3
    - 4
    - 5
    - 6 the person is very like me

- **Security**
    - It is important to her to live in **secure surroundings**. She avoids anything that might endanger his safety.
    - It is very important to her that her **country is safe**. She thinks that the state needs to be alert to threats from within and without.

Data: Value Questions

- **Universalism**
    - He thinks it is important that every person in the world be **treated equally**. He wants that everyone has the same opportunities.
    - It is important to her to **listen to people** who are different from her. Even when she disagrees with them, she still wants to **understand them**.
    - He strongly believes that people should **care for nature**. Looking after the environment is important to him.

- **Conformity**
    - It is important to her always to **behave properly**. She wants to avoid doing anything people would say is wrong.
    - He believes that people should do what they're told. He thinks people should **follow rules** at all times.
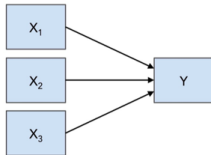
Data: Issue Opinion Questions

- **Immigration**
  Now we turn to immigration possibilities for foreign nationals.
  Should the possibility of immigration for foreign nationals be
  eased or restricted? What is your opinion about immigration
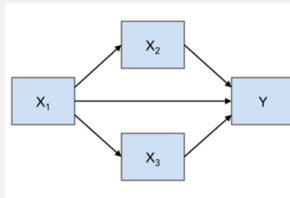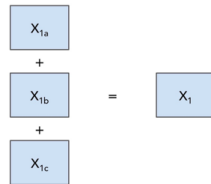 possibilities for foreign nationals?
    - 1 Ease immigration of foreign nationals
    - 2
    - 3
    - 4
    - 5
    - 6 Restrict immigration of foreign nationals

- Other issue opinion items used: **European integration,
  integration of migrants, socio-economy (taxes vs.
  welfare), privacy vs. state interference**

Structural Equation Modelling

Standard Multivariate Analysis

Measurement Model: **Confirmatory Factor Analysis**

Complex causal networks: **Path Analysis**
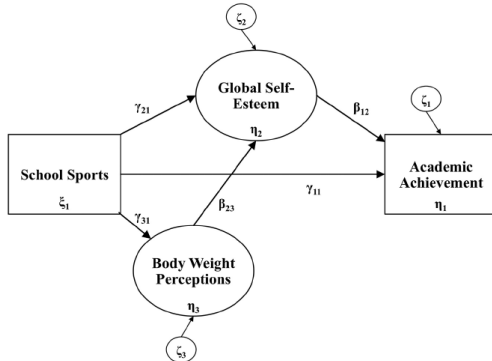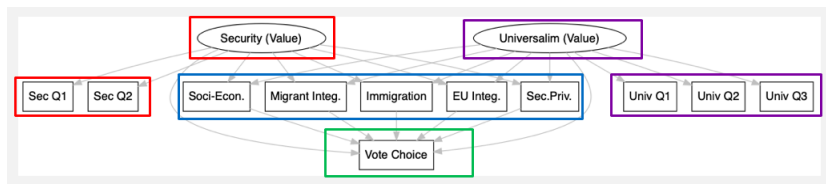
SEM

Structural Equation Modelling

Figure 1. Conceptual model linking physical activity and academic achievement. Rectangles denote observed variables, and ovals denote latent variables.

School Sports Participation and Academic Achievement in Middle and High School. Christopher J. Wretman. Journal of the Society for Social Work and Research 2017 8:3

The Model (kind'a)

The Code

```
 93  model <- '
 94  # 1. measurement model
 95  sec =~ kp1_3320e + kp1_3320m
 96  univ =~ kp1_3320c + kp1_3320h + kp1_3320u
 97  conf =~ kp1_3320n + kp1_3320q
 98
 99  # outcome model
100  CDU ~ c1*sec + c2*univ + c3*conf + b1*Immigrat1 + b2*MigInteg1 + b3*SecPriv1 + b4'
     *Climate1 + Age + Income+ Gender + Educ + Relig
101
102  # mediator models
103  Immigrat1 ~ a11*sec + a12*univ + a13*conf + Age + Income+ Gender + Educ + Relig
104  MigInteg1 ~ a21*sec + a22*univ + a23*conf + Age + Income+ Gender + Educ + Relig
105  SecPriv1 ~ a31*sec + a32*univ + a33*conf + Age + Income+ Gender + Educ + Relig
106  EuInteg1 ~ a41*sec + a42*univ + a43*conf + Age + Income+ Gender + Educ + Relig
107  SocEcon1 ~ a51*sec + a52*univ + a53*conf + Age + Income+ Gender + Educ + Relig
108  Climate1 ~ a61*sec + a62*univ + a63*conf + Age + Income+ Gender + Educ + Relig
109
```
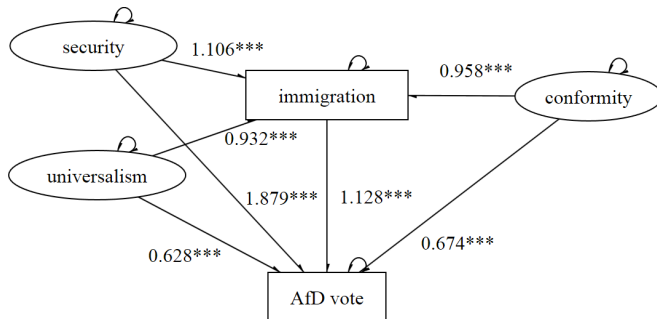
YES, I SHOULD PROBABLY SWITCH TO R-STUDIO.

Findings

Our SEM model has 3 components:

1. The Measurement Model (EFA: Questions to latent values)
   - Questions load well and the loadings are very similar for the three values and among different party bases.

2. Opinions ∼ Values + Socio-demographics (Ordered Logit)
   - Values are WAY MORE important in explaining the issues opinions than socio-demographics (age, gender, religion etc.)
   - Security is the most important personal value for all opinions but climate change for which universalism is more important.

3. Vote Choice ∼ Values + Opinions + Socio-demographics (Binary Logit)
   - Values have, BY FAR, the strongest explanatory power for party choice for all the parties apart from FDP.
   - This is actually the "meat" of our paper and I will talk about this next.

SEM: AfD vote choice

SEM: CDU vote choice