Implicit measures of automatic evaluation

Exploring new methods to measure attitudes towards language varieties

Laura Rosseel, Dirk Geeraerts, Dirk Speelman

RU Quantitative Lexicology and Variational Linguistics
Introduction

• Since 1960s/1980s little methodological innovation in language attitudes research (until recently)

• Traditional methods: (Garrett 2010)
  – Surveys (direct)
  – Speaker evaluation paradigm (indirect)
  – Societal treatment

• Problems: self-presentation, limited introspection, artificiality, lack of semantic & syntactic control (Speelman et al. 2013; Garrett 2010; Gawronski et al. 2011)

• Innovation: inspired by attitude research in social psychology
Outline

1. Implicit measures
2. Overview of techniques
3. AAP & IAT: success stories?
4. AMP & ST-IAT: new possibilities?
5. Conclusion
Outline

1. Implicit measures
2. Overview of techniques
3. AAP & IAT: success stories?
4. AMP & ST-IAT: new possibilities?
5. Conclusion
Implicit measures

• Implicit techniques measure automatic associations

  – Association object & evaluation in memory = attitude (Fazio 2007)

  – Automaticity?

Four horsemen of automaticity (Bargh 1994)

  • unconscious
  • unintentional
  • efficient
  • uncontrollable
Implicit measures

What have they been used for so far?

• Various fields:
  
  marketing, psychiatry, (social) psychology,…

• Wide variety of topics:

  Advertising (Hätner & Trampe 2009), sexual preference (Imhoff et al. 2010), alcoholism (Payne et al. 2008), self-mutilation (Franklin et al. 2014), self-esteem (Vandromme 2012), racism (Payne et al. 2005), gender stereotypes (Cvencek et al. 2011), etc.
Outline

1. Implicit measures
2. Overview of techniques
3. AAP & IAT: success stories?
4. AMP & ST-IAT: new possibilities?
5. Conclusion
Overview of techniques

Two paradigms:

1. **Response interference paradigm**  
   (Gawronski et al. 2011; Teige-Mocigemba et al. 2010)

2. **Sequential priming paradigm**  
   (Wentura & Degner 2010; Spruyt et al. 2011)

= measure implicit attitudes  
= two congruent stimuli → faster response  
≠ presentation of stimuli: simultaneous vs. sequential  
≠ underlying mechanisms
### Overview of techniques

<table>
<thead>
<tr>
<th></th>
<th>Response interference paradigm</th>
<th>Sequential priming paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previously introduced to linguistics</td>
<td>Implicit association test (IAT)</td>
<td>Auditory affective priming (AAP)</td>
</tr>
<tr>
<td>New to linguistics</td>
<td>Single target implicit association test (ST-IAT)</td>
<td>Affect misattribution procedure (AMP)</td>
</tr>
</tbody>
</table>
Outline

1. Implicit measures
2. Overview of techniques
3. AAP & IAT: success stories?
4. AMP & ST-IAT: new possibilities?
5. Conclusion
## Overview of techniques

<table>
<thead>
<tr>
<th>Response interference paradigm</th>
<th>Sequential priming paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previously introduced to linguistics</td>
<td>Implicit association test (IAT)</td>
</tr>
<tr>
<td>New to linguistics</td>
<td>Single target implicit association test (ST-IAT)</td>
</tr>
</tbody>
</table>
Implicit Association Test (IAT)

How it works

<table>
<thead>
<tr>
<th>Category names</th>
<th>TARGET CONCEPT</th>
<th>ATTRIBUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stimuli</td>
<td>black/white</td>
<td>good/bad</td>
</tr>
</tbody>
</table>

-lovely, terrific, horrible, disgusting
Implicit Association Test (IAT)

Block 1 – Target discrimination

black

white
Implicit Association Test (IAT)

Block 2 – Attribute discrimination

good

bad

horrible
Implicit Association Test (IAT)

Block 3 – Critical block: combined task

black       white
good        bad

horrible
Implicit Association Test (IAT)

Block 4 – Target concept discrimination reversed

white  black
Implicit Association Test (IAT)

Block 5 – Critical block: combined task reversed

- white
- good
- horrible
- black
- bad
Implicit Association Test (IAT)

In linguistics:

Redinger (2010)
Pantos (2010, 2012)
Campbell-Kibler (2012, 2013)
Implicit Association Test (IAT)

Redinger (2010)

- Attitudes towards French & Luxembourgish
- Labels & positive/negative adjectives as stimuli
- Very small sample (N = 5)
- More positive attitudes towards Luxembourgish
Implicit Association Test (IAT)

Pantos (2010, 2012)

- Attitudes towards foreign accented vs. US English
- Auditory stimuli + written pos/neg adjectives
- Clear preference for US English <-> explicit attitudes

US bad

foreign good
Implicit Association Test (IAT)
Campbell-Kibler (2012, 2013)

• Associations between linguistic variables and the social information they index

• Both auditory & written versions of variables

<table>
<thead>
<tr>
<th>Target concept</th>
<th>Attribute category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exp.1 (ING)</td>
<td>region</td>
</tr>
<tr>
<td></td>
<td>education/ occupation</td>
</tr>
<tr>
<td></td>
<td>language ideology</td>
</tr>
<tr>
<td>Exp.2 (ING)</td>
<td>region</td>
</tr>
<tr>
<td></td>
<td>/ay/ monophtongization (ay – ah)</td>
</tr>
<tr>
<td></td>
<td>/t/ release (burst – no burst)</td>
</tr>
</tbody>
</table>
Implicit Association Test (IAT) Evaluation:

| Practical complexity          | - participant  
<table>
<thead>
<tr>
<th></th>
<th>- researcher (reaction times)</th>
</tr>
</thead>
</table>
| Linguistic/auditory stimuli   | + OK (labels & auditory stimuli)  
|                              | + length: rather flexible |
| Psychometric qualities        | + good reliability & validity |
| Relation attribute – target   | + valence & semantic |
| Other                         | - binary structure / comparative structure  
|                              | - practice effect: max. 1 test |
|                              | - extra-personal associations → P-IAT |
|                              | - naming of categories  
|                              | + inspiration development model of cognitive processes underlying attitudes |

Methods in Dialectology XV, Groningen 15.08.2014
## Overview of techniques

<table>
<thead>
<tr>
<th>Previously introduced to linguistics</th>
<th>Response interference paradigm</th>
<th>Sequential priming paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Implicit association test (IAT)</strong></td>
<td><strong>Auditory affective priming (AAP)</strong></td>
<td></td>
</tr>
</tbody>
</table>

| New to linguistics | Single target implicit association test (ST-IAT) | Affect misattribution procedure (AMP) |
Affective Priming (AP)

How it works
Affective Priming (AP)

Prime | Target | Congruence | Response speed
---|---|---|---
+ | + | congruent | faster
+ | - | incongruent | slower
- | + | incongruent | slower
- | - | congruent | faster
Auditory Affective Priming (AAP)

In linguistics? Speelman et al. (2013)

• Attitudes towards 3 varieties of Dutch in Belgium
• Auditory primes, pictures as targets
• For periphery: standard > own (peripheral) > central variety
  For centre: own (central) > standard > peripheral variety
# Affective Priming (AP)

## Evaluation?

<table>
<thead>
<tr>
<th>Practical complexity</th>
<th>+ simple for participant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- difficult to programme (reaction times)</td>
</tr>
<tr>
<td></td>
<td>- neutral primes necessary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Linguistic/auditory stimuli</th>
<th>+ OK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- length: very limited</td>
</tr>
</tbody>
</table>

| Psychometric qualities                                    | - not satisfactory, low reliability           |

| Relation prime – target                                   | + valence (& semantic)                        |

| Other                                                     | - few prime categories per experiment →      |
|                                                          | limited number of attitude objects can be     |
|                                                          | compared                                     |
|                                                          | - very sensitive procedure                    |
|                                                          | + publications: many                          |
|                                                          | + no naming of categories                    |
Outline

1. Implicit measures
2. Overview of techniques
3. AAP & IAT: success stories?
4. AMP & ST-IAT: new possibilities?
5. Conclusion
## Overview of techniques

<table>
<thead>
<tr>
<th></th>
<th>Response interference paradigm</th>
<th>Sequential priming paradigm</th>
</tr>
</thead>
</table>
## Single target IAT (ST-IAT)

### How it works

<table>
<thead>
<tr>
<th>Category names</th>
<th><strong>TARGET CONCEPT</strong></th>
<th><strong>ATTRIBUTE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stimuli</td>
<td>CDU</td>
<td>good/bad</td>
</tr>
<tr>
<td></td>
<td>Schäuble, Koch</td>
<td>love, vacation, health, disease, death, pain</td>
</tr>
</tbody>
</table>

(Bluemke & Friese 2008)

**Methods in Dialectology XV, Groningen 15.08.2014**
Implicit Association Test (IAT)

Block 1 – Attribute discrimination

good

bad

vacation
Implicit Association Test (IAT)

Block 2 – Critical block: combined task
Implicit Association Test (IAT)

Block 3 – Critical block: combined task reversed

CDU
bad
good
# Single target IAT (ST-IAT)

## Evaluation

| Practical complexity       | + rather simple for the participant  
<table>
<thead>
<tr>
<th></th>
<th>- difficult to programme (reaction times)</th>
</tr>
</thead>
</table>
| Linguistic/auditory stimuli | + (OK)  
|                           | + length: rather flexible             |
| Psychometric qualities     | + good reliability & validity         |
| Relation attribute – target | + valence & semantic                  |
| Other                     | +/- publications: moderate            
|                           | + not binary / comparative            
|                           | + multiple subsequent tests possible  |
Overview of techniques

<table>
<thead>
<tr>
<th></th>
<th>Response interference paradigm</th>
<th>Sequential priming paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previously introduced to</td>
<td>Implicit association test (IAT)</td>
<td>Auditory affective priming (AAP)</td>
</tr>
<tr>
<td>linguistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New to linguistics</td>
<td>Single target implicit association test (ST-IAT)</td>
<td>Affect misattribution procedure (AMP)</td>
</tr>
</tbody>
</table>
Affect misattribution procedure (AMP)

How it works

Prime  Target  Backward mask

?<?

Methods in Dialectology XV, Groningen 15.08.2014
Affect misattribution procedure (AMP)
Affect misattribution procedure (AMP)
Affect misattribution procedure (AMP)
# Affect misattribution procedure (AMP)

## Evaluation:

| Practical complexity | + rather simple for the participant  
|                       | + simple to programme / measure (no reaction times)  |
| Linguistic/auditory stimuli | - ?  
|                       | - length: limited  |
| Psychometric qualities | + good reliability & validity  |
| Relation attribute – target | + valence & semantic  |
| Other | - implicitness questioned  
|       | + publications: moderate – many  
|       | + no neutral primes  
<p>|       | + multiple prime categories (attitudes objects) in one experiment  |</p>
<table>
<thead>
<tr>
<th>Measure</th>
<th>Practical complexity</th>
<th>Linguistic/auditory stimuli</th>
<th>Psychometric qualities</th>
<th>Relation prime &amp; target</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAT</td>
<td>- participant</td>
<td>+OK</td>
<td>+ good</td>
<td>Valence &amp; semantic</td>
<td>- binary / comparative structure</td>
</tr>
<tr>
<td></td>
<td>- researcher</td>
<td>+ length: rather flexible</td>
<td></td>
<td></td>
<td>- practice effect: max. 1 test</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- extra-personal associations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+ publications: many</td>
</tr>
<tr>
<td>AAP</td>
<td>+ participant</td>
<td>+OK</td>
<td>- not very good</td>
<td>Valence &amp; (semantic)</td>
<td>- few prime categories / experiment</td>
</tr>
<tr>
<td></td>
<td>- researcher</td>
<td>- length: very limited</td>
<td></td>
<td></td>
<td>- very sensitive procedure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- neutral primes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+ publications (AP): many</td>
</tr>
<tr>
<td>ST-IAT</td>
<td>+ participant</td>
<td>+(OK)</td>
<td>+ good</td>
<td>Valence &amp; semantic</td>
<td>- extra-personal associations</td>
</tr>
<tr>
<td></td>
<td>- researcher</td>
<td>+ length: rather flexible</td>
<td></td>
<td></td>
<td>+ not binary/comparative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+/- publications: moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+ several subsequent tests</td>
</tr>
<tr>
<td>AMP</td>
<td>+ participant</td>
<td>-?</td>
<td>+ good</td>
<td>Valence &amp; semantic</td>
<td>- implicitness questioned</td>
</tr>
<tr>
<td></td>
<td>+ researcher</td>
<td>- length: limited</td>
<td></td>
<td></td>
<td>+ multiple prime categories</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+ no neutral primes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+ publications: moderate-many</td>
</tr>
</tbody>
</table>
Outline

1. Implicit measures
2. Overview of techniques
3. AAP & IAT: success stories?
4. AMP & ST-IAT: new possibilities?
5. Conclusion
Conclusion

Limitations implicit measures
- Sensitive to many procedural details
- No gold standard
- Lack of context in prime stimuli

Advantages
- Extensive literature from psychology → ample evidence for validity & reliability
- Limit the influence of social desirability & lack of introspection
- Fairly short and easy to administer
- Inspiration in implicit measures paradigms to help sociolinguistics to develop a cognitive model of language attitudes
- Method to test hypotheses, not an exploratory technique
Conclusion

• Early to draw any definitive conclusions, but promising avenue if:
  more research is done to develop a gold standard so techniques become easier to implement

• No technique is perfect
  → choose technique in function of research question
  → methods can complement each other

• Implicit measures as a valuable addition to be used in addition to other (traditional) methods to make up for each other’s limitations
References


References


References


References


for further information:
laura.rosseel@kuleuven.be
http://wwwling.arts.kuleuven.be/qlvl/laura