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Stream A: The Technical Design of Online Surveys

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Dynamic Forms: Online Surveys 2.0

Overview

- dynamic forms - potential benefits
- technical side: a Web 2.0 technique
- experiment 1: dynamic text fields
- experiment 2: dynamic lists
- Web 2.0 or not 2.0?

Dynamic Forms

- collection of reactive data in self-administered surveys
- new technique of making Web sites dynamic (i.e. no static content)
- instant feedback possible
- established ways of making Web pages dynamic
  - direct (e.g. with JavaScript)
    pro: instant feedback
    con: only restricted operations
  - indirect (e.g. with PHP)
    pro: very complex computations possible
    con: always with a delay in time

Dynamic Forms

- combining the advantages of direct and indirect approaches
  - instant feedback
  - complex computations

Dynamic Forms – Technique

- combination of established techniques: AJAX (asychronous JavaScript and XML), a so-called Web 2.0 technique
- modification of client-server communication
  - permanent data transfer possible
  - no serial, but synchronous communication
  - database can be contacted during visit on Web page
  - no user initiated reload necessary to refresh content: single parts of a Web page can be loaded gradually on demand

Dynamic Forms – Technique

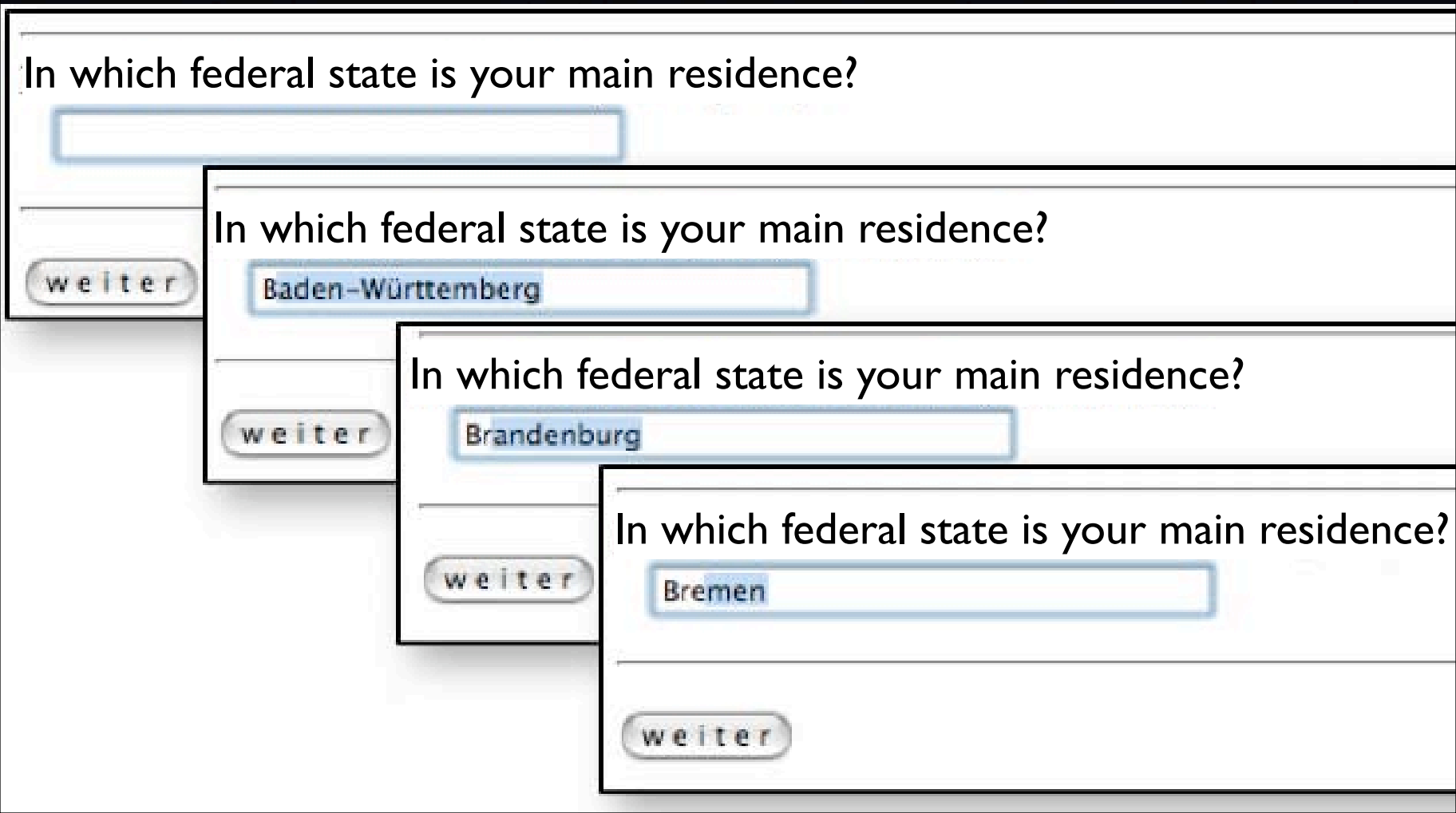
- client's burden: JavaScript has to be enabled
- use in Web surveys:
  - instant, complex feedback
  - finding of answer can be supported in a new way
  - better communication between participant and survey administrator
- go 2.0 or no 2.0?
  - stay low-tech, or do positive effects offset the danger of sample bias through complex techniques?

Dynamic Text Fields

- on the first glance: like an ordinary HTML text field
- while typing: suggestion of the most probable word is offered
- suggestions are readapted with each new letter entered, almost in real time
- suggestions can be retrieved from a database
- if JavaScript is not enabled, dynamic text field can be used like a conventional text field
- e.g. in desktop applications, Google suggest (beta) or search bar in recent Firefox or Internet Explorer

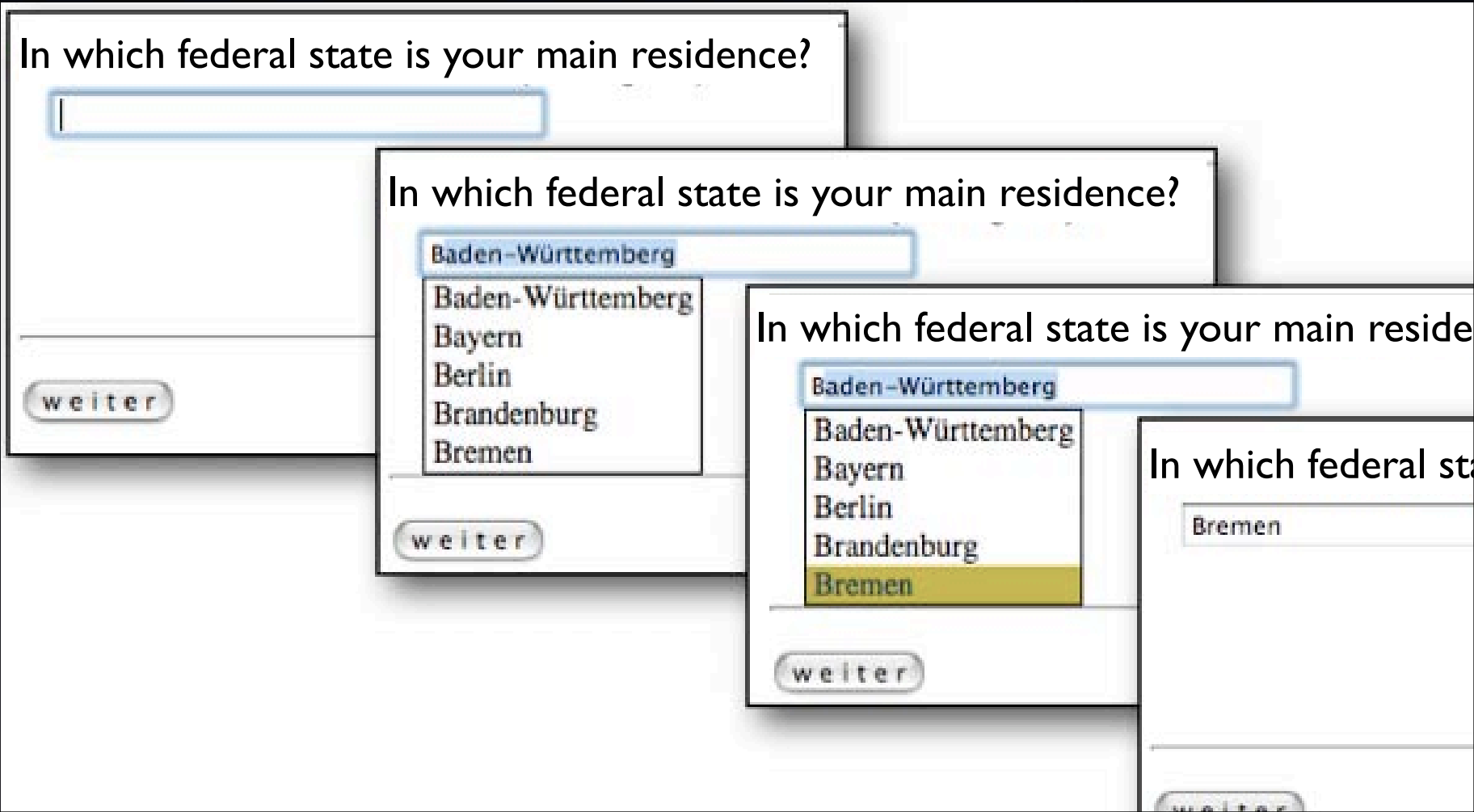
Dynamic Text Field - Autocomplete

- type autocomplete:
  ending of the current word is offered



Dynamic Text Field - Suggest

- type suggest:
  not one, but multiple suggestions are made

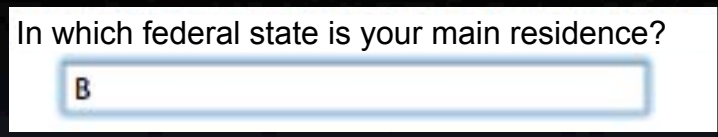


Experiment 1 - Dynamic Text Fields

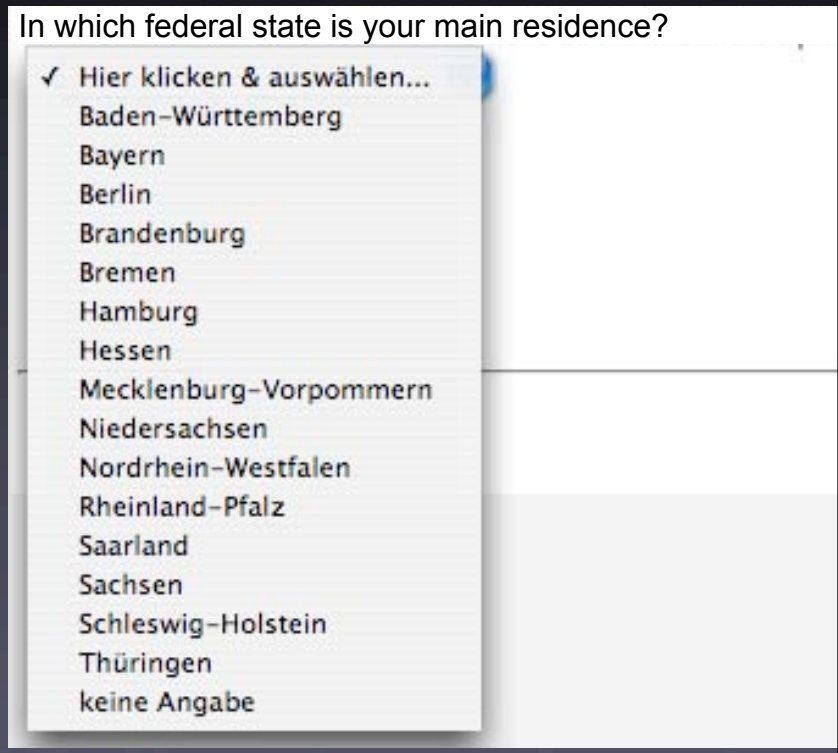
- sample
  - participants of the 2006 congress of the german society for sociology (DGS)
  - 7.4% without JavaScript
  - n=515
  - item: "In which federal state is your main residence?" (16 variable values)
- analyses
  - client side: response time, data quality
  - admin side: efforts needed to code data

Experiment 1 - Dynamic Text Fields

- independent variable: input type, 5 levels
  - level 1: plain HTML text field



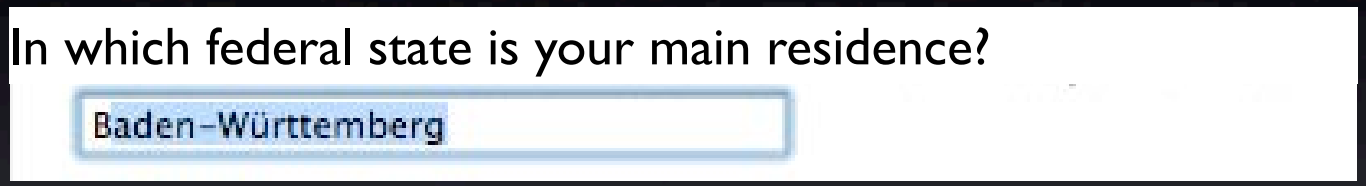
  - level 2: drop-down list



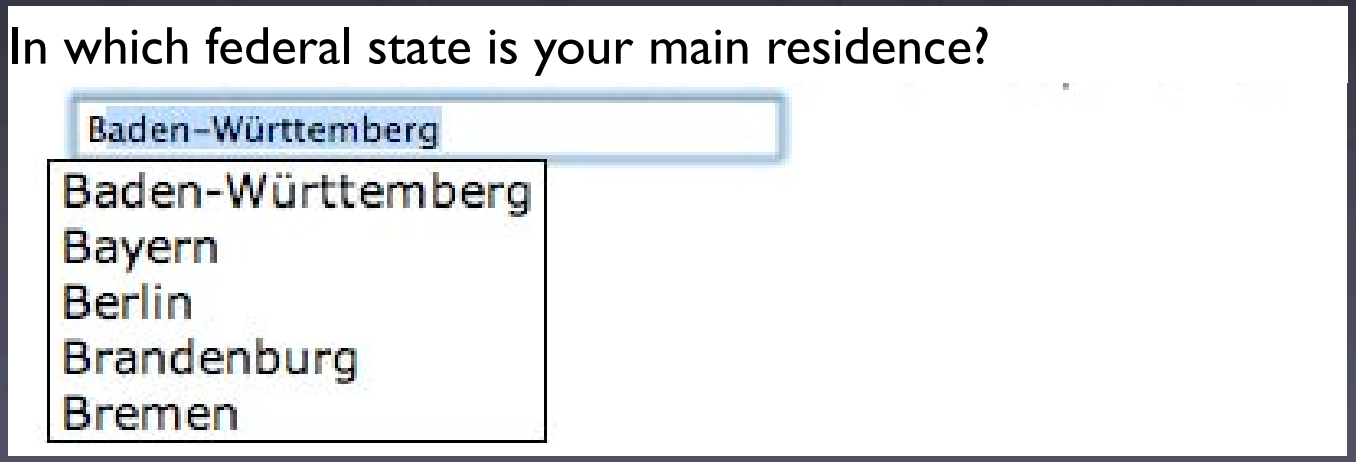
  - level 3: radio buttons

Experiment 1 - Dynamic Text Fields

- independent variable: input type, 5 levels
  - level 4: dynamic text field - autocomplete

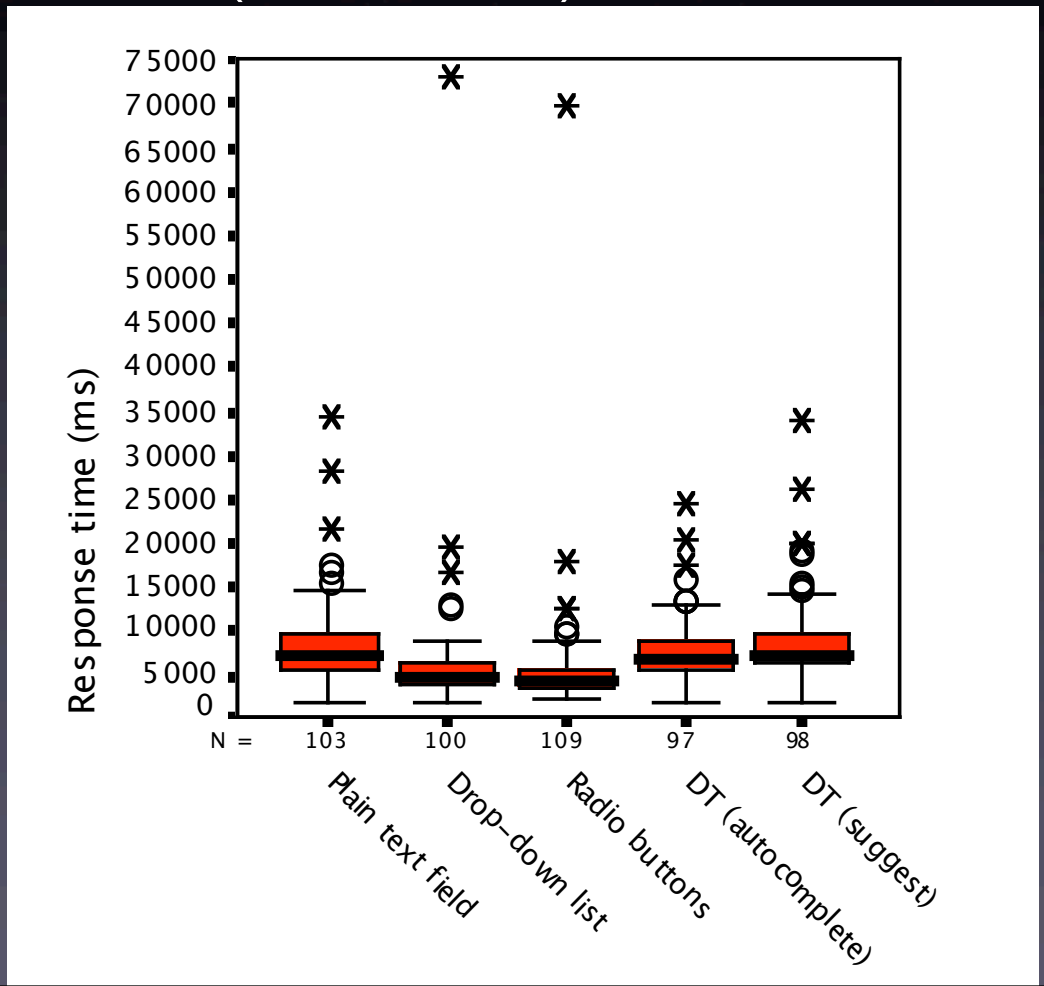


  - level 5: dynamic text field - suggest



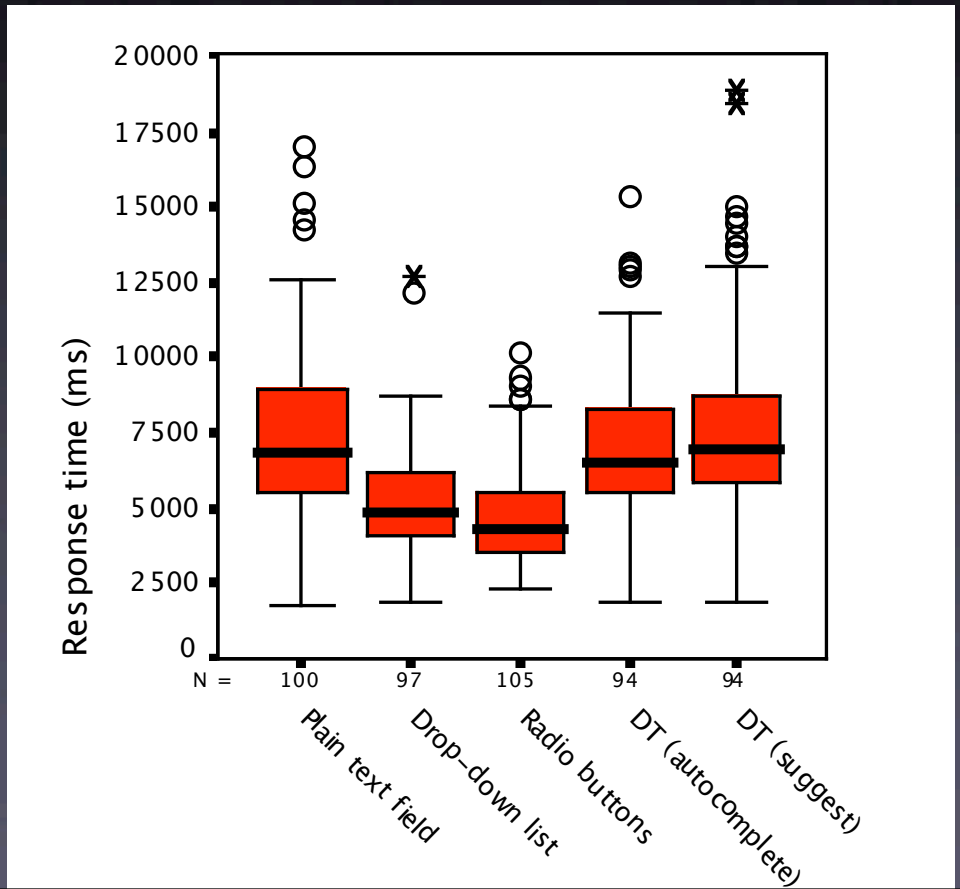
Experiment 1 - Dynamic Text Fields

- equal distribution to conditions (19.4% - 21.2%)
- response times (raw values)



Experiment 1 - Dynamic Text Fields

- outlier = mean +/- 3*interquartile ranges
- in each condition 2.9% to 4.1% of cases excluded from further analysis of response time

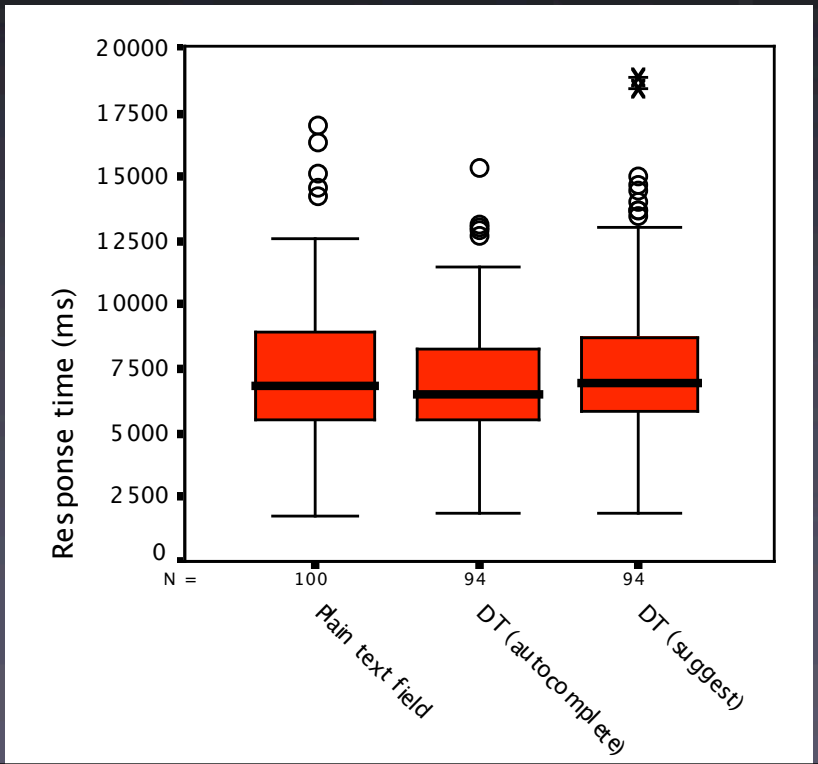


Experiment 1 - Dynamic Text Fields

- response time
  - dynamic text field - suggest (n=94)
    M=7.9 sec, SD=3.2
  - HTML text field (n=100)
    M=7.3 sec, SD=2.8
  - dynamic text field - autocomplete (n=94)
    M=7.1 sec, SD=2.3
  - drop-down list (n=97)
    M=5.3 sec, SD=1.8
  - radio buttons (n=105)
    M=4.8 sec, SD=1.6

Experiment 1 - Dynamic Text Fields

- response time
  - difference between all groups is highly significant: $F(4, 485)=32.014$, $p<.001$
- a closer look on open-ended data collection:



Experiment 1 - Dynamic Text Fields

- response time
  - no statistical significant difference between conventional and dynamic text fields:
    $F(2, 285) = 2.130$, *ns*

- result 1:
  dynamic text fields neither have a positive nor a negative influence on response time

- so: why go 2.0?

Experiment 1 - Dynamic Text Fields

- quality of data
  - no dropout at all
  - item nonresponse quite low:
    4.9% HTML text field (n=5)
    3.9% dynamic text - suggest (n=4)
    3.0% dynamic text - autocomplete (n=3)

- result 2:
  no influence on dropout and item nonresponse was observed (but: floor effect)

- still: why go 2.0?

Experiment 1 - Dynamic Text Fields

- efforts needed for coding data
  - exact answers
    83.7% dynamic text - autocomplete
    81.6% HTML text field
    80.6% dynamic text - suggest
  - spelling mistakes
    2.0% HTML text field
    1.0% dynamic text - suggest
    0.0% dynamic text - autocomplete

Experiment 1 - Dynamic Text Fields

- efforts needed for coding data
  - use of abbreviations
    19.4% dynamic text - autocomplete
    15.3% HTML text field
    13.3% dynamic text - suggest
  - invalid answers
    2.0% dynamic text - suggest
    1.0% HTML text field
    0.0% dynamic text - autocomplete
- result 3:
  no statistically significant difference in coding efforts

Experiment 1 - Conclusions

- dynamic text fields are feasible in Web surveys
- dynamic text fields do not improve upon conventional HTML text fields: no decrease of use of abbreviations
- there is no benefit:
  no need to go 2.0
- limitation:
  - task was very simple (no deep processing)
  - only few suggestions were made

Dynamic Lists

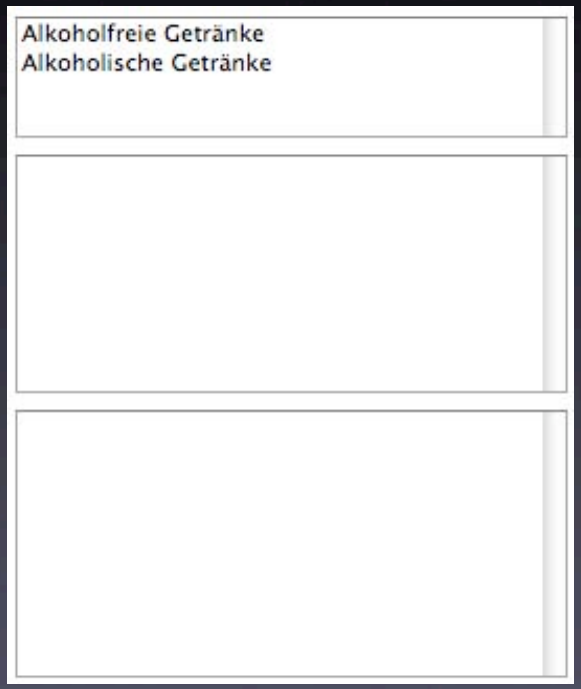
- for assessment of closed-ended questions

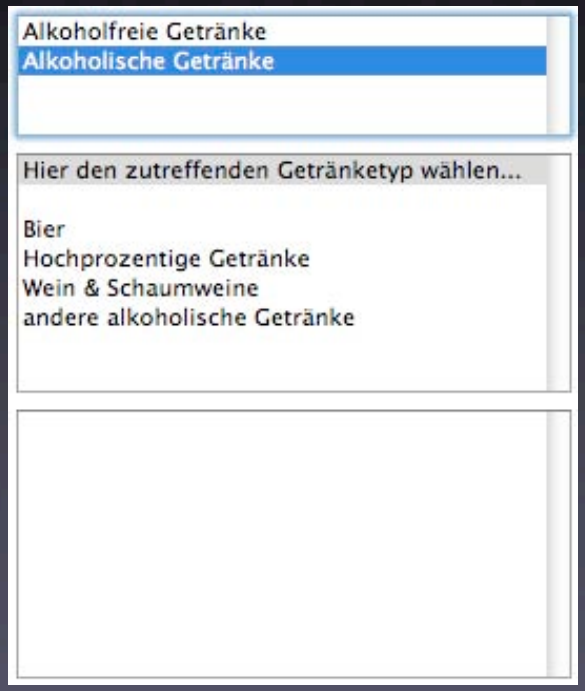
- confusing, if a variable has too many possible values that are presented on a single page
  - convenient way: multipage filtering (e.g. via PHP)
  - 2.0 way: filtering on a single page with dynamic list

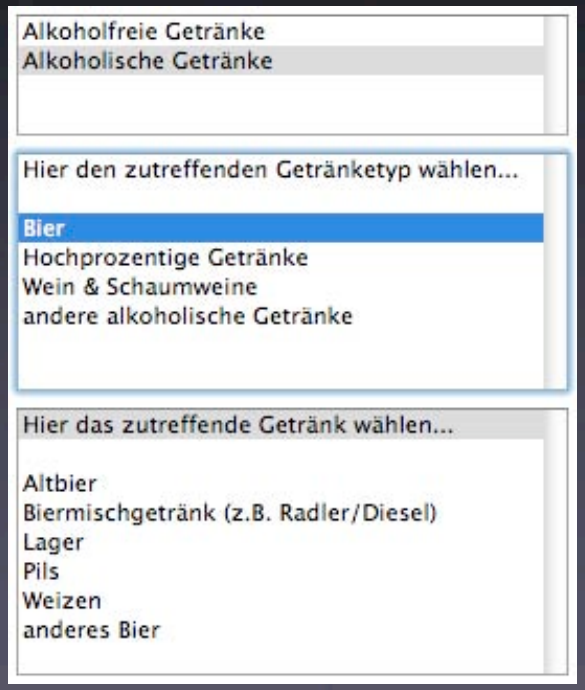
- answer process is broken down to multiple steps
- item needs to be brought in a hierarchical order

Dynamic Lists

- decision process on a single Web page
- if JavaScript is not enabled: only choice on the top level





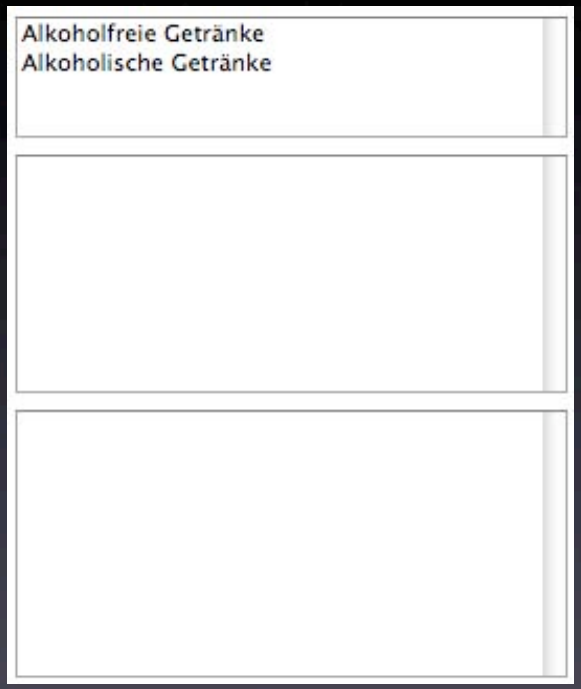


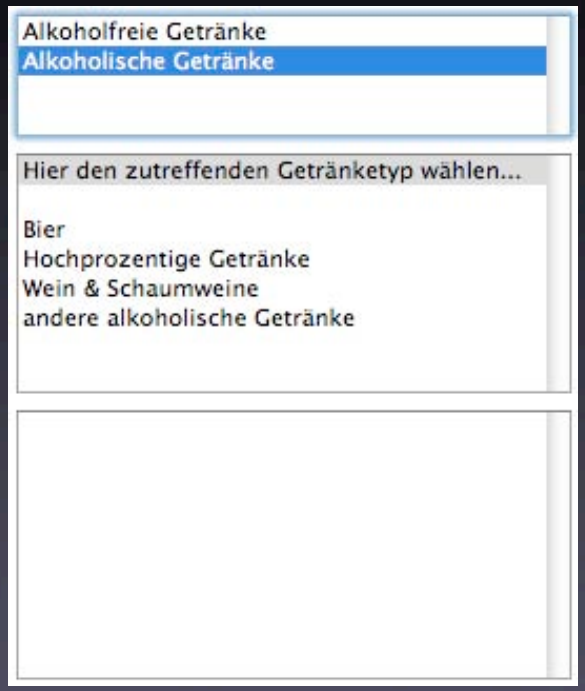
Experiment 2 - Dynamic Lists

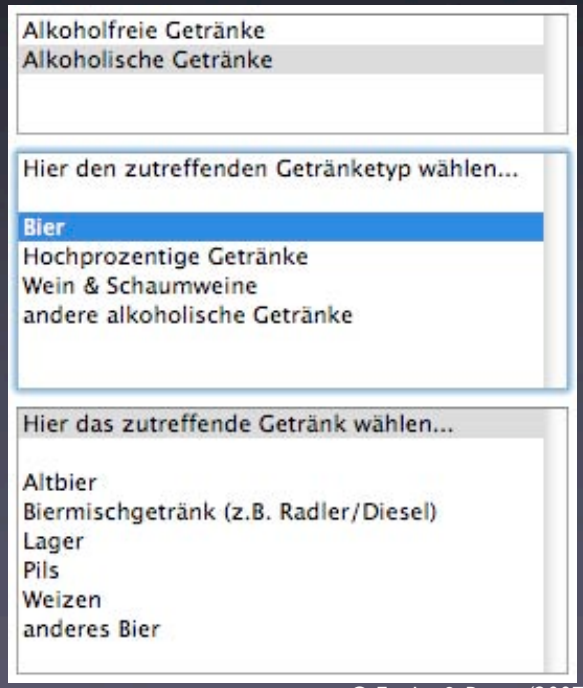
- sample
  - members of the online panel at the university of Kassel
- item: "What is your favorite drink, when you go out with your friends at night?" (48 possible values)
- independent variable: type of filtering
  - 3 levels
    - dynamic list (filtering on the fly)
    - radio buttons (no filtering)
    - multipage filtering

Experiment 2 - Dynamic Lists

- dynamic list:

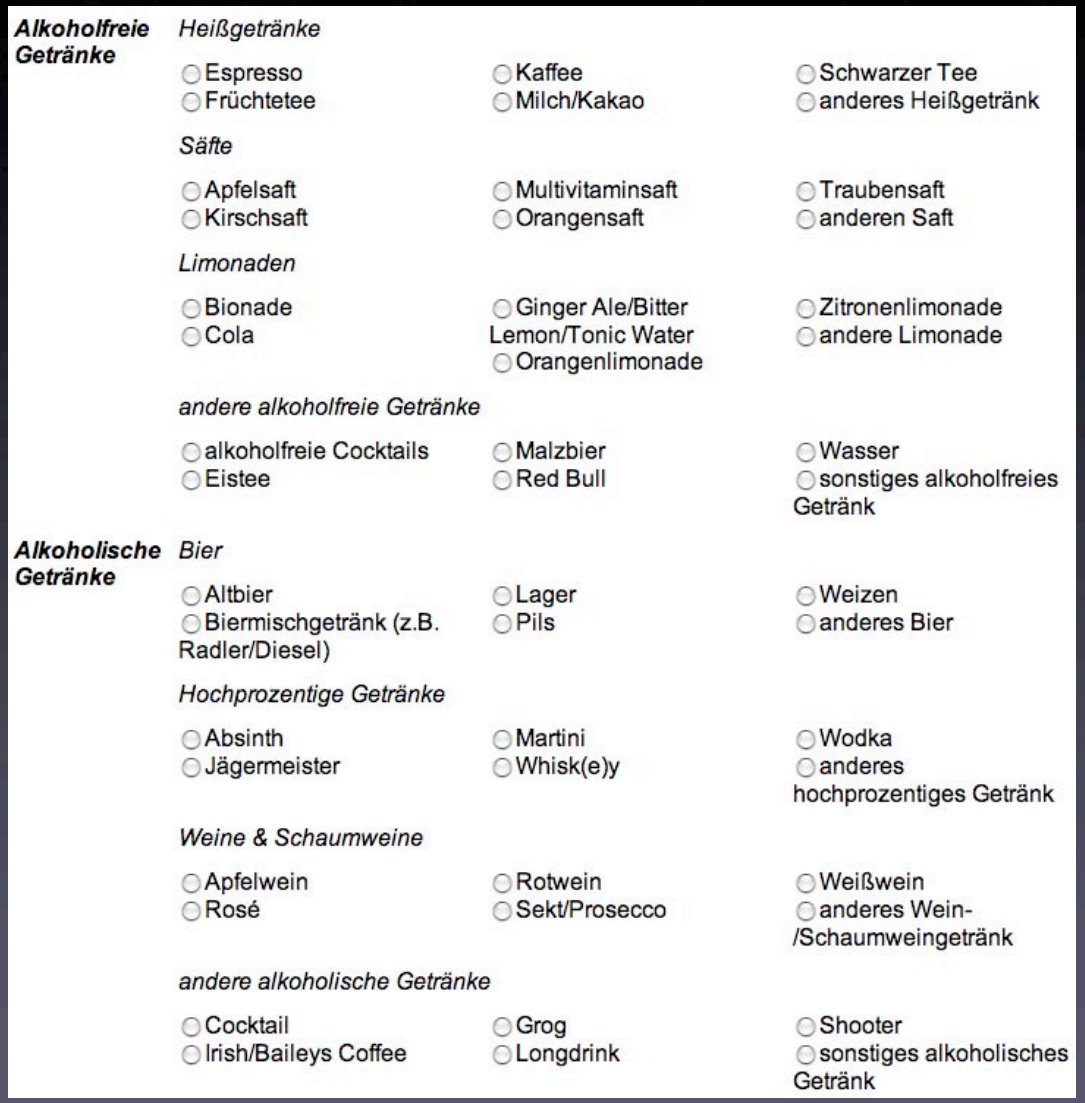






Experiment 2 - Dynamic Lists

- radio buttons (no filtering):



Alkoholfreie Getränke

Heißgetränke

- ○ Espresso
- ○ Kaffee
- ○ Schwarzer Tee
- ○ Früchtetee
- ○ Milch/Kakao
- ○ anderes Heißgetränk

Säfte

- ○ Apfelsaft
- ○ Multivitaminsaft
- ○ Traubensaft
- ○ Kirschsaft
- ○ Orangensaft
- ○ anderen Saft

Limonaden

- ○ Bionade
- ○ Ginger Ale/Bitter Lemon/Tonic Water
- ○ Zitronenlimonade
- ○ Cola
- ○ Orangenlimonade
- ○ andere Limonade

andere alkoholfreie Getränke

- ○ alkoholfreie Cocktails
- ○ Malzbier
- ○ Wasser
- ○ Eistee
- ○ Red Bull
- ○ sonstiges alkoholfreies Getränk

Alkoholische Getränke

Bier

- ○ Altbier
- ○ Lager
- ○ Weizen
- ○ Biermischgetränk (z.B. Radler/Diesel)
- ○ Pils
- ○ anderes Bier

Hochprozentige Getränke

- ○ Absinth
- ○ Martini
- ○ Wodka
- ○ Jägermeister
- ○ Whisk(e)y
- ○ anderes hochprozentiges Getränk

Weine & Schaumweine

- ○ Apfelwein
- ○ Rotwein
- ○ Weißwein
- ○ Rosé
- ○ Sekt/Prosecco
- ○ anderes Wein-/Schaumweingetränk

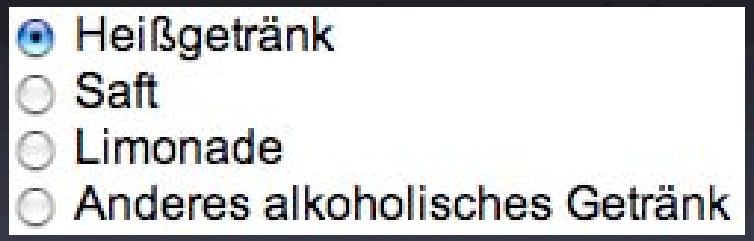
andere alkoholische Getränke

- ○ Cocktail
- ○ Grog
- ○ Shooter
- ○ Irish/Baileys Coffee
- ○ Longdrink
- ○ sonstiges alkoholisches Getränk

Experiment 2 - Dynamic Lists

- multipage filtering:
  - page 1

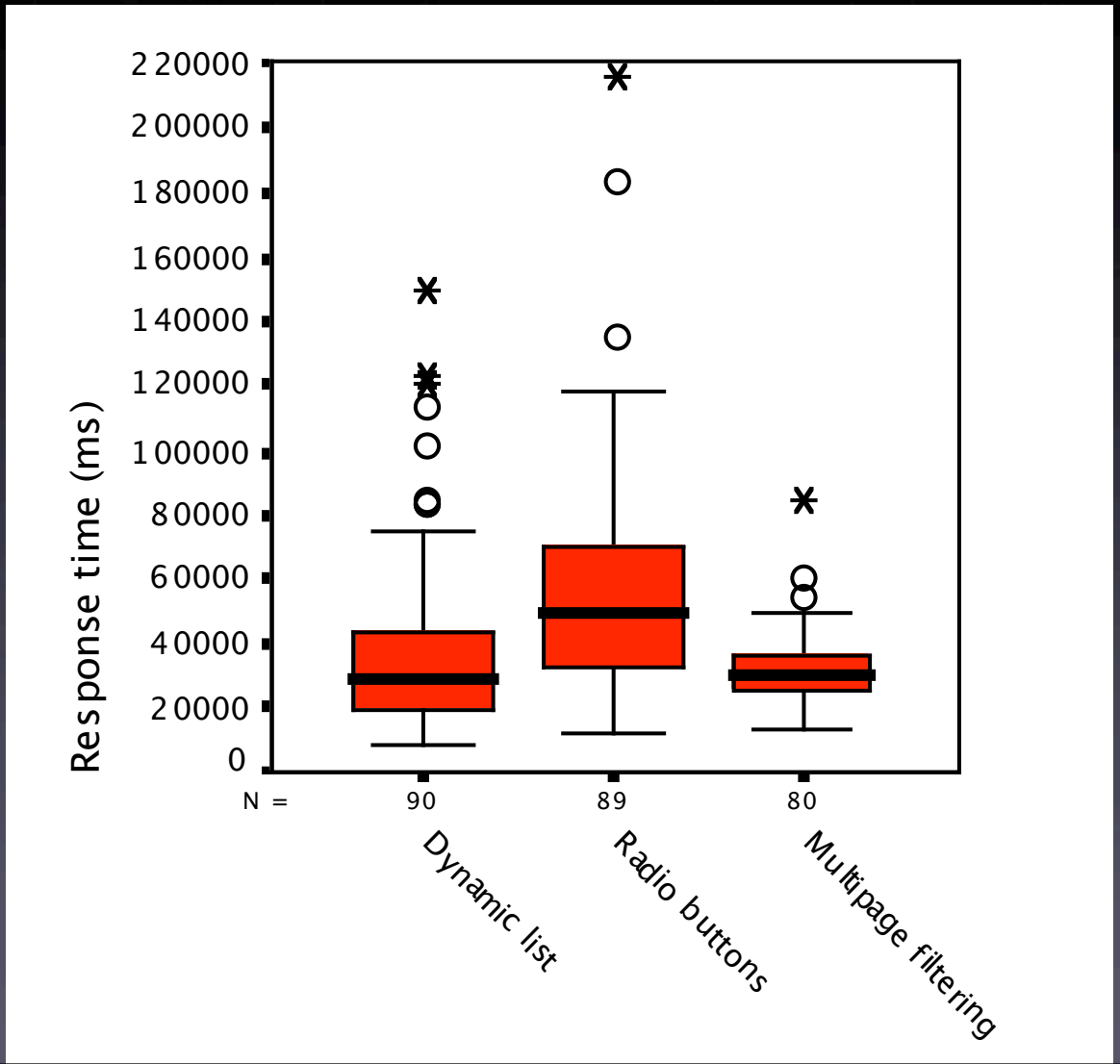
  - page 2



  - page 3

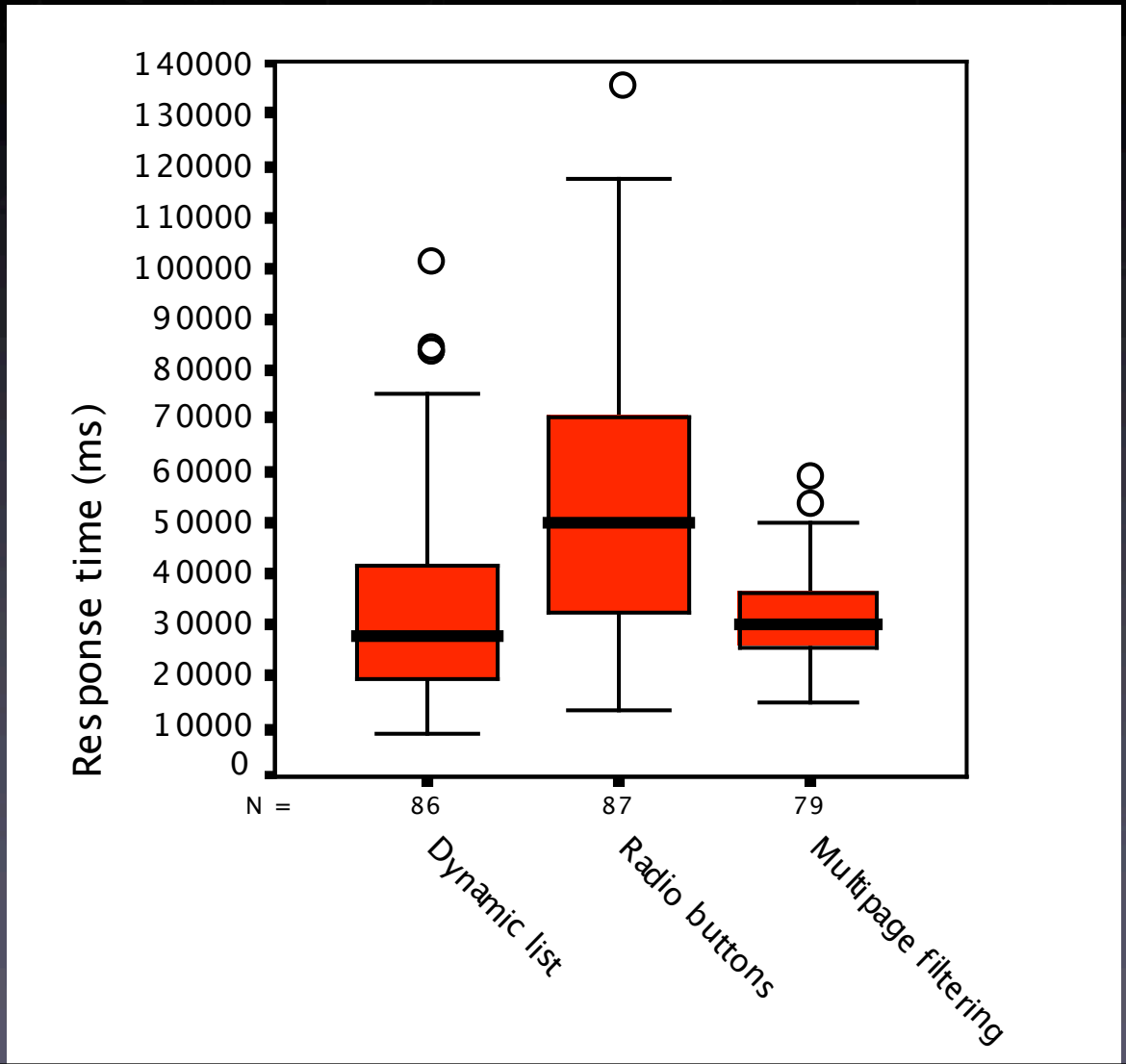
Experiment 2 - Dynamic Lists

- response time (raw values)



Experiment 2 - Dynamic Lists

- response time (outlier removed)

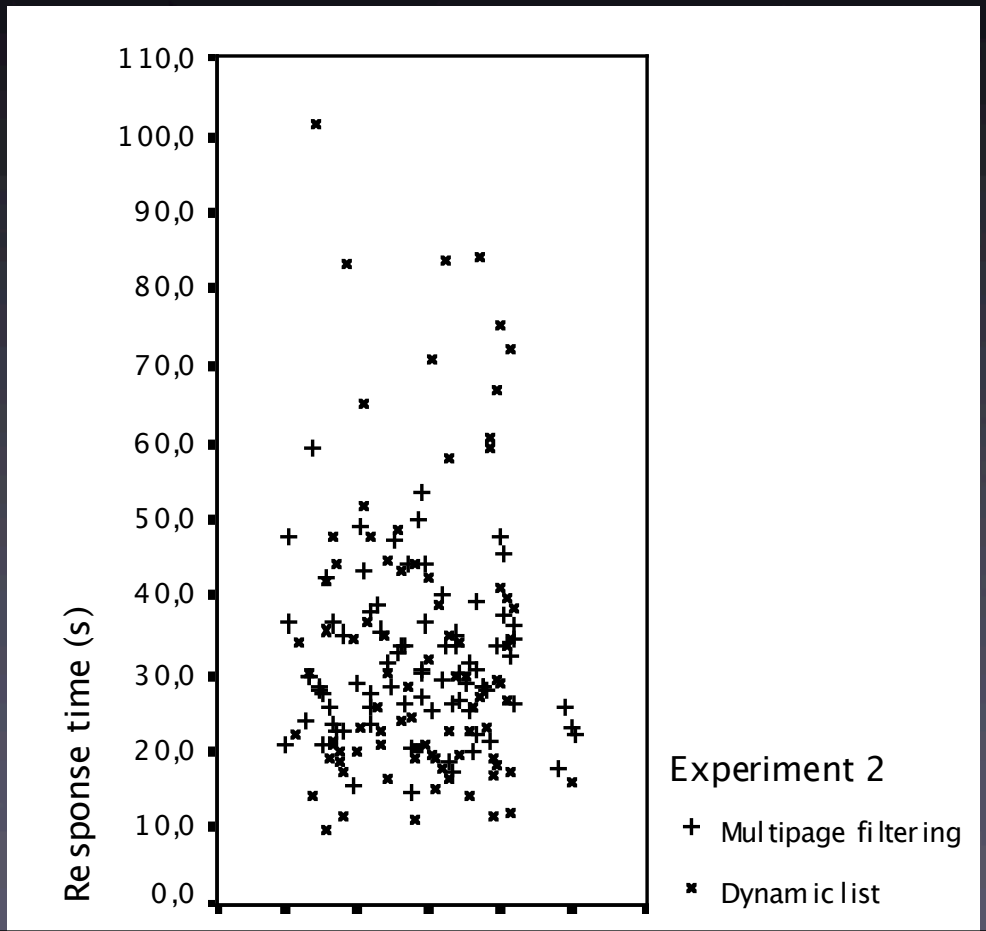


Experiment 2 - Dynamic Lists

- response time (outlier removed)
  - no filtering (radio buttons)
    M=52.4 sec, SD=24.5
  - dynamic list
    M=33.2 sec, SD=19.5
  - multipage filtering
    M=31.2 sec, SD=9.2
- overall difference is highly significant:
  $F(2, 249)=32.083$, $p<.001$
- difference between multipage und dynamic list is not statistically significant: $F(1, 163) = 0.704$, *ns*

Experiment 2 - Dynamic Lists

- response time: great difference in SD
  19.5 sec: dynamic list
  9.2 sec: multipage filtering



Experiment 2 - Dynamic Lists

- response time
  - dynamic lists produces fewer extremely high, more middle and more extremely low response times
    - answering *can* be fast with dynamic lists
    - deeper cognitive processing?
    - more playing with the instrument?

Experiment 2 - Dynamic Lists

- data quality
  - no dropout
  - no item nonresponse
- inconclusive if there is an effect

Experiment 2 - Dynamic Lists

- variety of answers
  - different answers
    - no filtering (radio buttons): 30 categories
    - dynamic filtering: 26 categories
    - multipage filtering: 23 categories
  - focus on "other" categories:
    34.8 no filtering (radio buttons)
    30.0 dynamic list
    13.8 multipage filtering
  - only the difference between dynamic list and no filtering (radio buttons) is not significant:
    Chi-Square (1, 179)=0.477, ns

Experiment 2 - Conclusions

- dynamic lists are feasible:
  no negative influence
- positiv influence 1:
  answers with dynamic list are more similar to radio buttons (=conscious choice between all possible values) than after convienient multipage filtering
- positive influence 2:
  response time with dynamic lists (M=3.7 sec) is lower in comparison with radio buttons (M=5.6 sec):
  $F(1, 171) = 32.477, p<.001$
- go 2.0 with dynamic lists

Discussion & Outlook

- go 2.0?
  - no,
    with open-ended questions & dynamic text fields
  - yes,
    with closed-ended questions & dynamic lists

- further research:
  - dynamic text fields with items with more than just 16 values

Thank you!