

# The Role of Ad Design:

Image Characteristics and Design Formats in Social Media Recruitment

Anna Hebel

GESIS - Leibniz Institute for the Social Sciences

Social Media as a Research Tool Webinar Series DEMED project at the University of Glasgow 04.11.2025

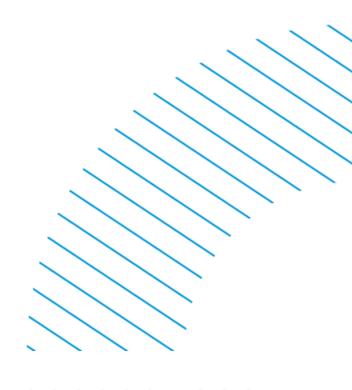






### Structure

- 1. About Ad Images
- 2. Research Aim
- 3. Research Project 1 Ad images in multiple studies
  - 3.1 RQ 1.1 Ad Images & Ad Performance
  - 3.2 RQ 2.1 Ad Images & Sample Composition
  - 3.3 RQ 3.1 Ad Image Characteristics & Ad Performance
- 4. Research Project 2 Visual design elements in recruitment
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- 5. Conclusion
- 6. Outlook



### Motivation: Social Media as a Recruitment Tool

What do we use it for?

- Fast and readily available data collection
- Hard-to-reach
- Online Panel (GP.dbd)

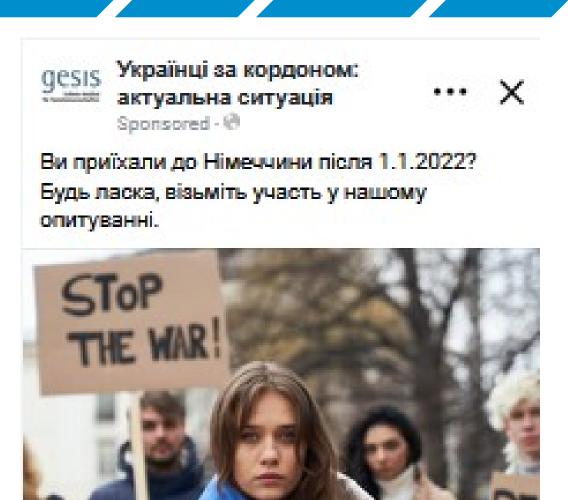
What role does ad design play in this process?

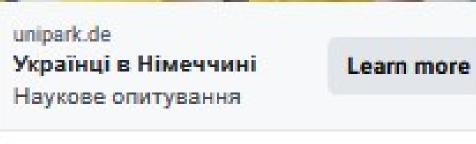


**RQ 2.2** 

# Why Ad Design Matters

Ads serve as the invitation letter





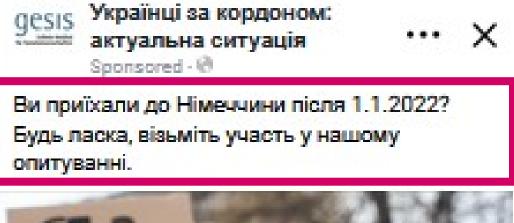




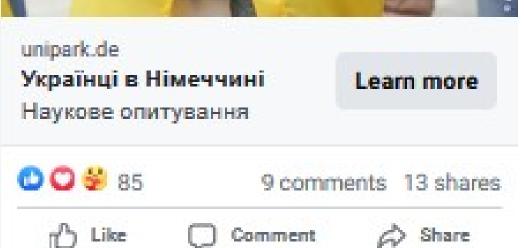
**RQ 2.2** 

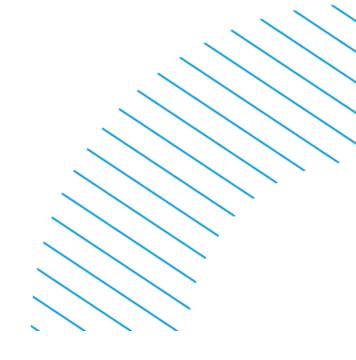
# Why Ad Design Matters

- Ads serve as the invitation letter
  - Ad description









Українці за кордоном:

Ви приїхали до Німеччини після 1.1.2022?

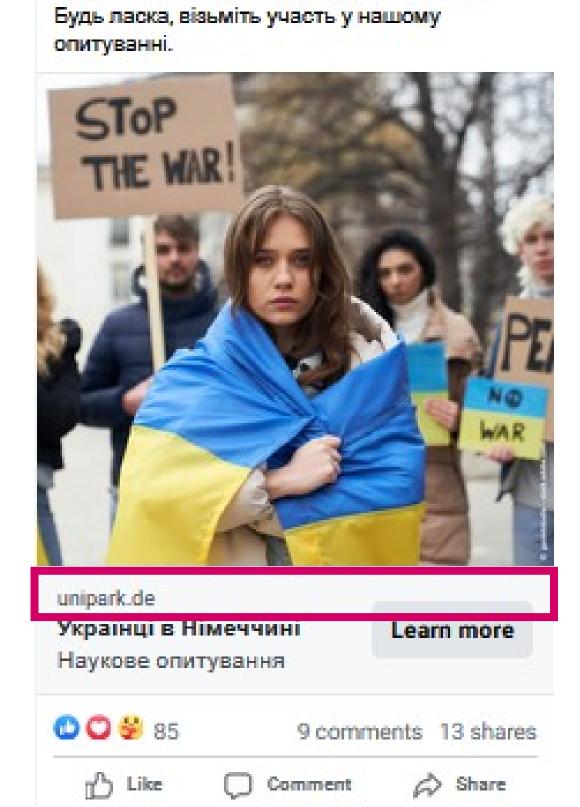
актуальна ситуація

Sponsored - 10

Conclusion

# Why Ad Design Matters

- Ads serve as the invitation letter
  - Ad description
  - Link leads outside of Meta





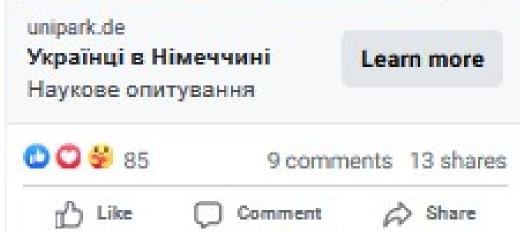
**RQ 2.2** 

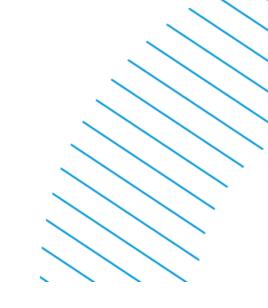
# Why Ad Design Matters

- Ads serve as the invitation letter
  - Ad description
  - Link leads outside of Meta
  - Ad image









# Research on Ad Images

#### Performance of Ad Images

- Linkclicks and CTR An et al. (2021); Ramo et al. (2014); Höhne et.al. (2025); Donzowa (2024); Hebel et al. (2025)
- **Costs** (CPU) Neundorf and Öztürk (2025); Ramo et al. (2014); Höhne et.al. (2025); Hebel et al. (2025)
- Survey Complets Höhne et.al. (2025); Hebel et al. (2025)

#### Sample Composition

- Gender & Age An et al. (2021); Hebel et al. (2025); Neundorf and Öztürk (2025)
- Education Neundorf and Öztürk (2025)



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# Research on Ad Images

### Response quality

 Multiple indicators - Donzowa (2024); Neundorf and Öztürk (2025)

Visual design elements (static vs. animated)

- Ad Performance: survey starts (Stern et al., 2022)
- Data quality: Break-offs; Non-substantive answers (Stern et al., 2022)



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### Research Aim

Provide recommendations on ad image selection for survey recruitment



- **Sample Composition**
- Response Quality





# Research Project 1

Ad images in multiple studies





# Research Project 1

#### Is an image worth a thousand respondents?

The relationship between ad images, ad performance, and sample composition in social media recruitment.

Authors: Anna Hebel; Steffen Pötzschke; Bernd Weiß.

Year: 2025

17.11.2025

Publication: Preprint doi https://doi.org/10.31219/osf.io/af3nr\_v2.

QR Code of the Preprint





Conclusion

### Research Project 1 Recruitment & Database

**RQ 1.3** 

|                               | (GEOOS)                            | (Pari-F)                 | (OSUR)             | (ReUP)  | (OneUA)  |
|-------------------------------|------------------------------------|--------------------------|--------------------|---|--|
| Target population             | German<br>emigrants                | Arabic speaking refugees | Ukrainian refugees | Ukrainian general population (incl. internally displaced) | Ukrainian general population/<br>Ukrainian refugees  |
| Surveyed country/ies          | Worldwide<br>(excluding<br>Europe) | Germany                  | Poland, Germany    | Ukraine   | Ukraine, Czech Republic,<br>Germany, Hungary, Italy,<br>Moldova, Netherlands,<br>Poland, Romania |
| Year of data collection       | 2020                               | 2021                     | 2022               | 2022  | 2022   |
| Field period in days (Survey) | 23                                 | 12                       | 17                 | 26  | 28   |
| Ad budget<br>(EUR)            | 1131.13                            | 2492.26                  | 3372.79            | 8366.23   | 24677.60   |
| Number of images              | 7/7                                | 7/5                      | 6/6                | 5/5   | 6/6  |
| Sample size                   | 2,824                              | 606                      | 1,181              | 14,144  | 32,730   |



# Research Project 1 - Research Questions

- RQ 1.1: Is there a relationship between ad images and ad performance?
- RQ 2.1: Are ad images related to sample composition?
- RQ 3.1: Can we identify specific image characteristics that are associated with ad performance?



**RQ 2.3** 

# Research Project 1 - Images





# Research Project 1 - Variables





- Unique outbound clicks
- Cost per unique outbound click
- Completed valid surveys
- Cost per completed valid survey



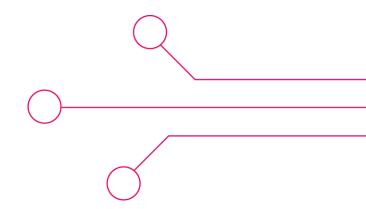
Conclusion

- **Sample Composition**
- Age
- Gender

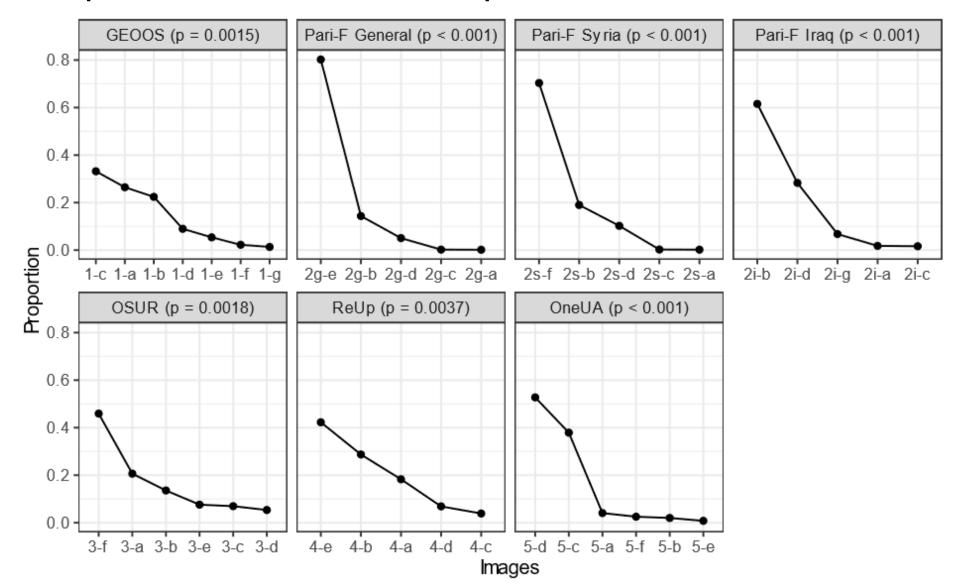


**RQ 2.3** 

### Ad Images & Ad Performance



#### Proportion of Median Unique Outbound Clicks



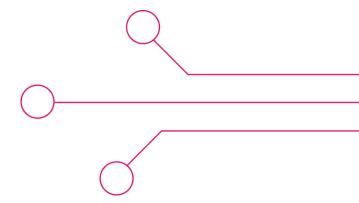
P-values in facet titles indicate significance of Kruskal-Wallis H tests

➤ Significant variation in link clicks across all ad images → images are associated with differences in clicks

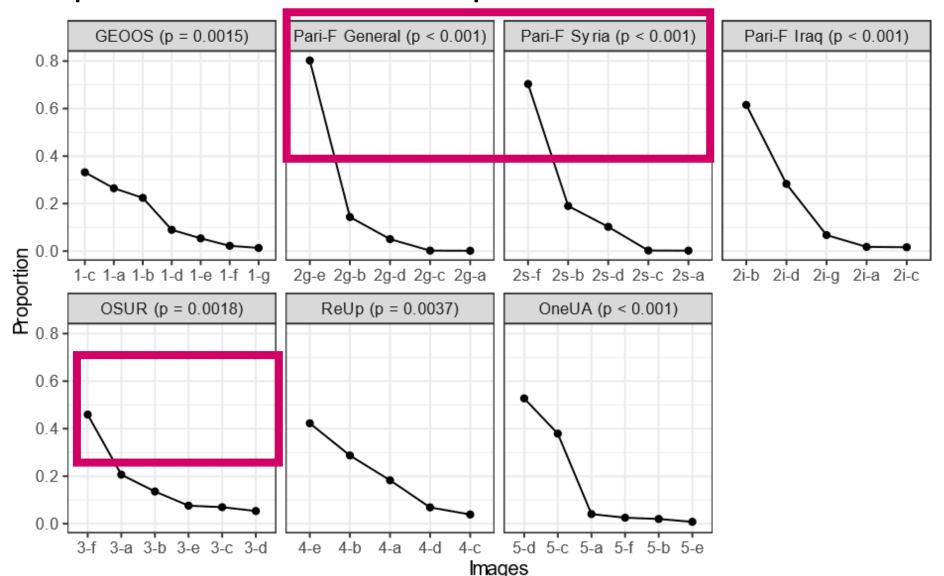


**Conclusion** 

### Ad Images & Ad Performance



#### Proportion of Median Unique Outbound Clicks



P-values in facet titles indicate significance of Kruskal-Wallis H tests

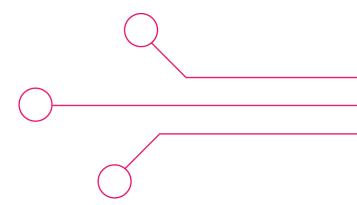
Some studies dominated by a single image (e.g., OSUR, Pari-F General, Pari-F Syria)



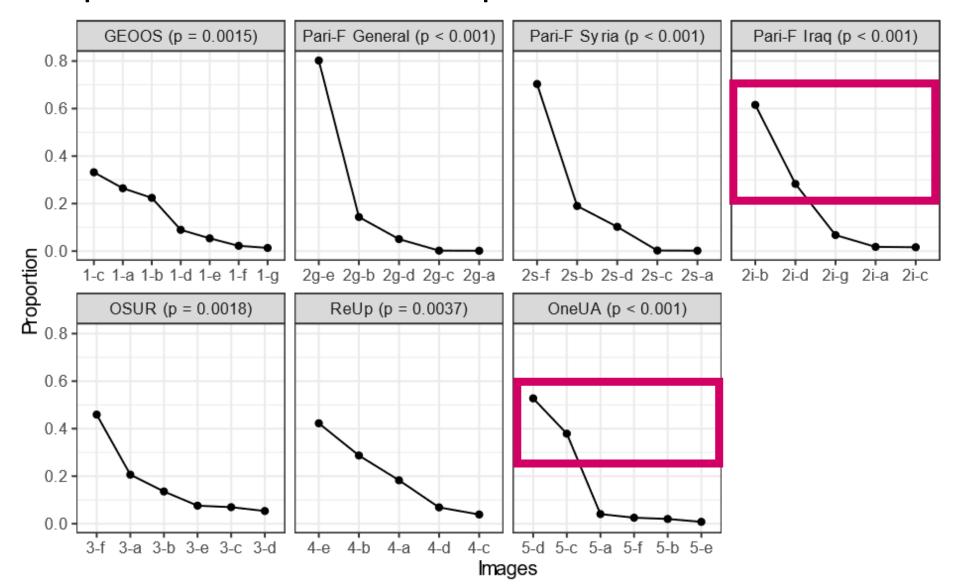
**RQ 1.3** 

Conclusion

### Ad Images & Ad Performance



#### Proportion of Median Unique Outbound Clicks



P-values in facet titles indicate significance of Kruskal-Wallis H tests

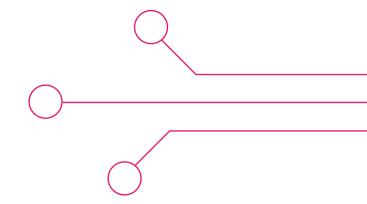
Two images dominate the clicks (OneUA and Pari-F Iraq)



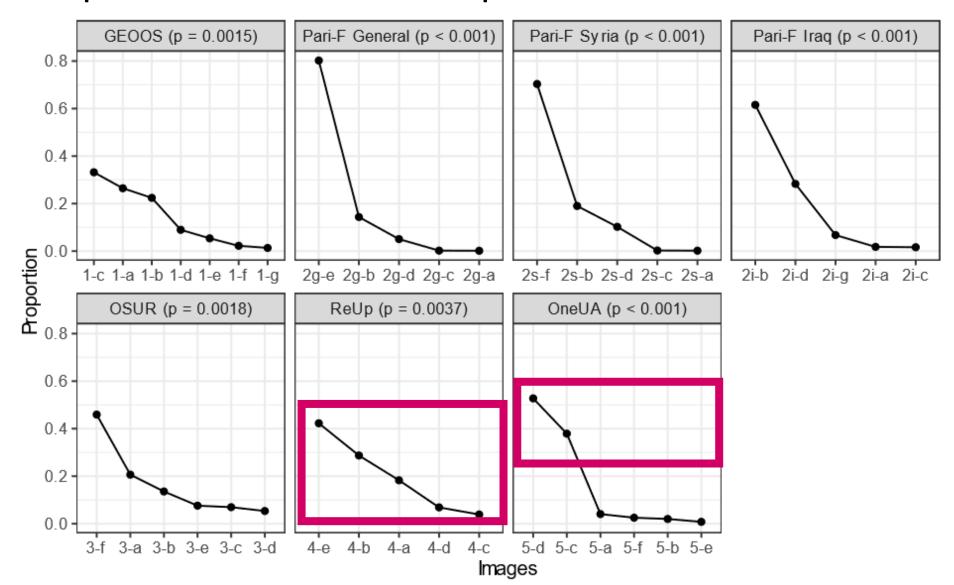
**RQ 2.3** 

**RQ 2.2** 

### Ad Images & Ad Performance



#### Proportion of Median Unique Outbound Clicks



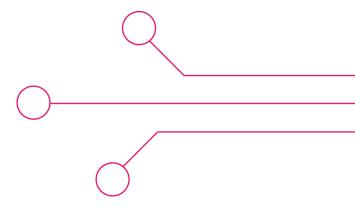
P-values in facet titles indicate significance of Kruskal-Wallis H tests

Other studies show more balanced distribution (e.g., GEOOS, ReUp)

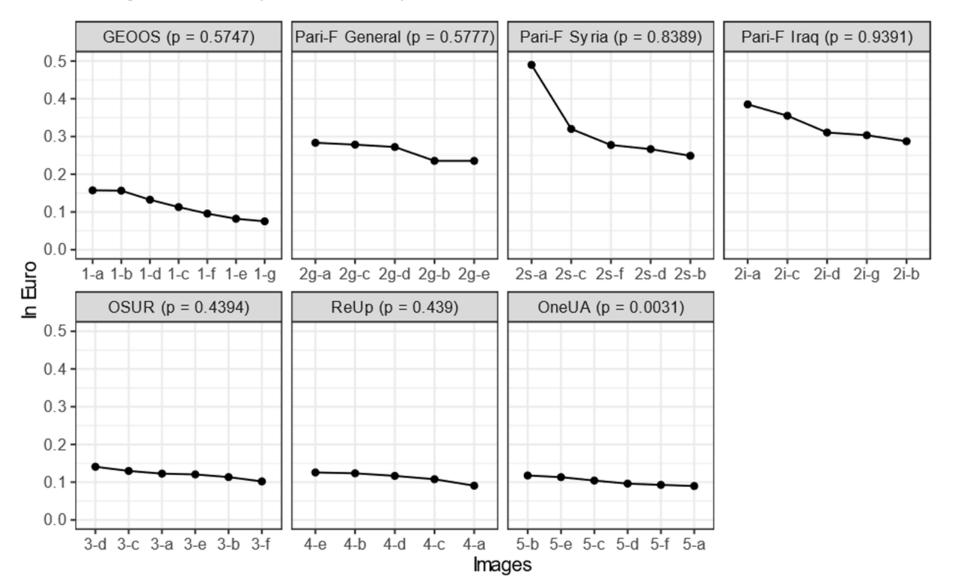


### Ad Images & Ad Performance





#### Average Cost per Unique Outbound Click (CPUC)



P-values in facet titles indicate significance of Kruskal-Wallis H tests

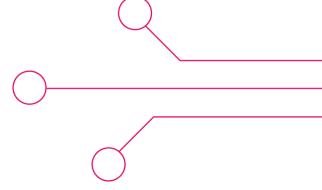
➤ Most studies: no significant variation in CPUC between images



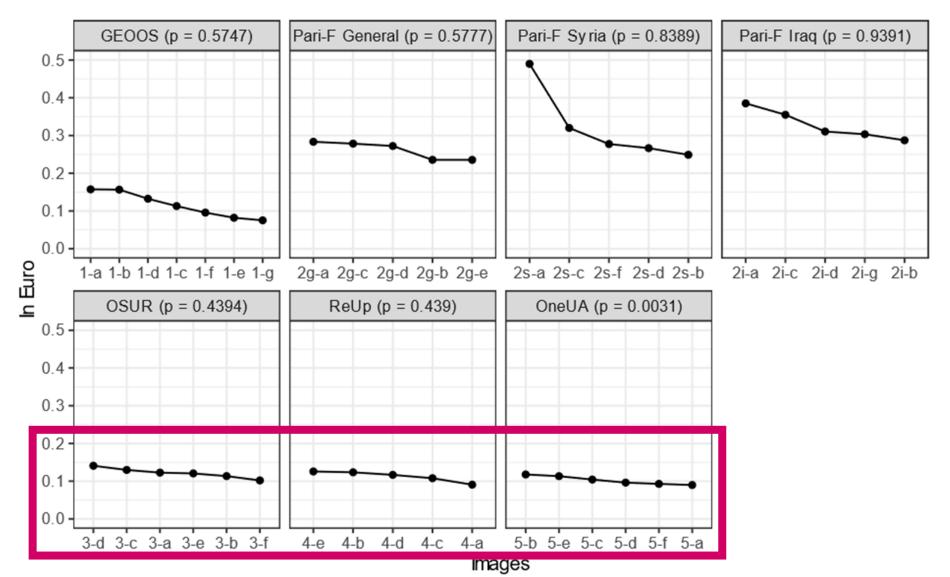
**RQ 2.3** 

### Ad Images & Ad Performance





#### Average Cost per Unique Outbound Click (CPUC)



P-values in facet titles indicate significance of Kruskal-Wallis H tests

- Costs range: 0.10–0.15 € (typical)
- > 0.10-0.50 € across all studies



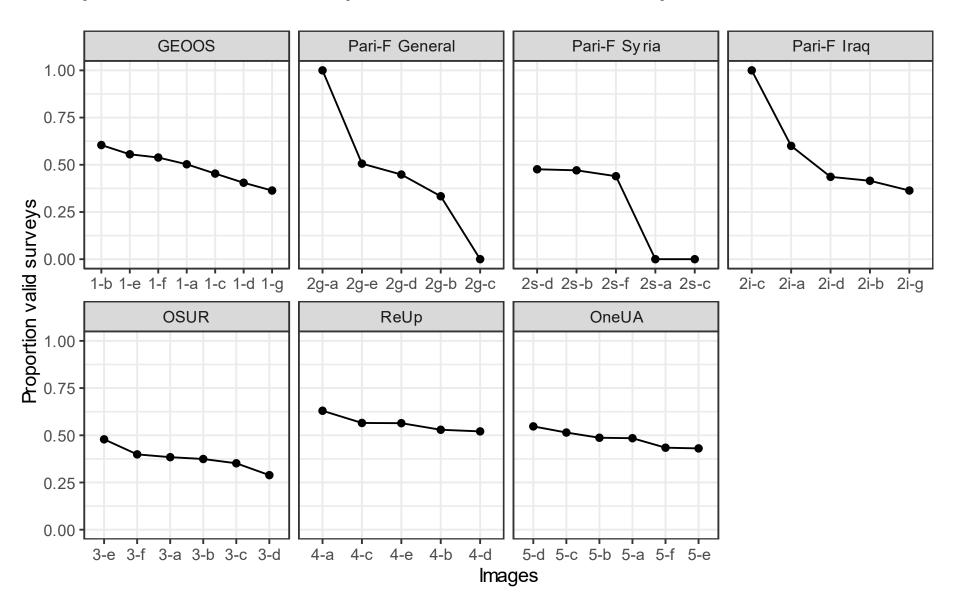
**RQ 1.2** 

**Outlook** 

### Ad Images & Ad Performance



#### **Proportion of Completed Valid Survey**



Valid completions only; proportions sum to 100% with invalid surveys.

Variation in valid completions across images and studies

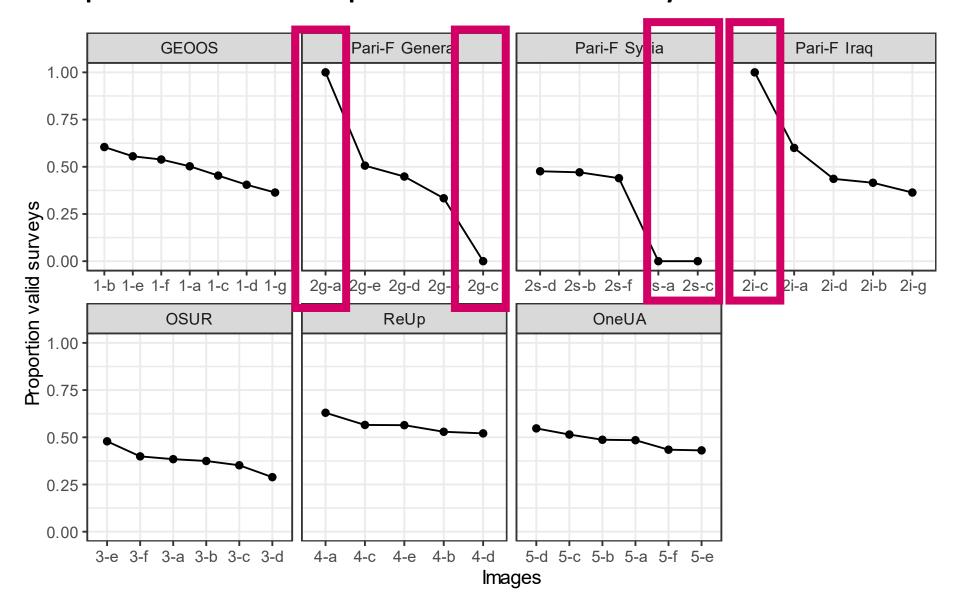


Conclusion

### Ad Images & Ad Performance



#### Proportion of Completed Valid Survey



Valid completions only; proportions sum to 100% with invalid surveys.



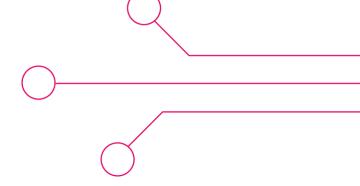


**RQ 1.2** 

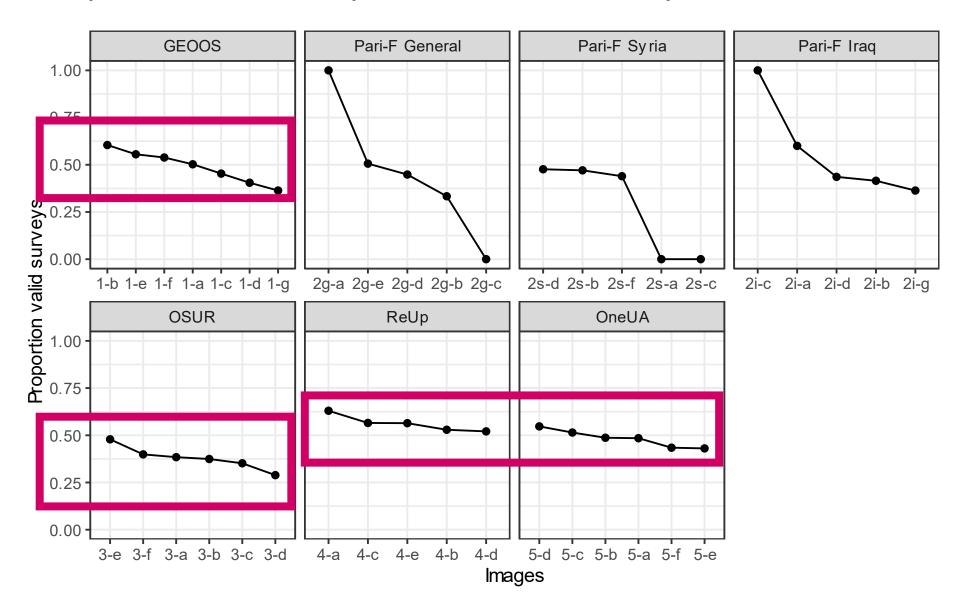
Conclusion

### Ad Images & Ad Performance





#### Proportion of Completed Valid Survey



Valid completions only; proportions sum to 100% with invalid surveys.

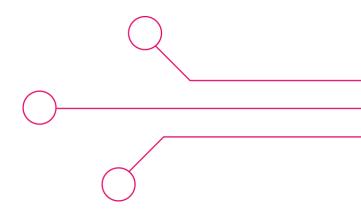
- > Stable results in ReUp and OneUA
- ➤ Larger variation in GEOOS and OSUR



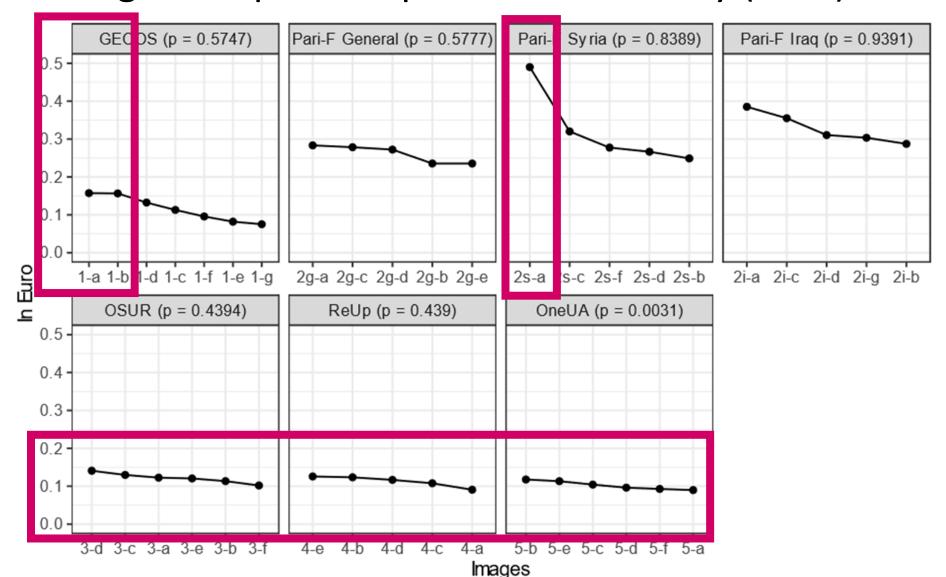
### Ad Images & Ad Performance 💷 🗐







#### Average Cost per Completed Valid Survey (Euro)



Only images associated with completed valid surveys are included

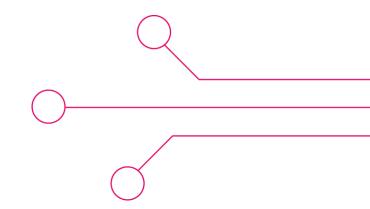
P-values in facet titles indicate significance of Kruskal-Wallis H tests

- Some Variation in costs
- $\triangleright$  Higher costs for certain images  $\rightarrow$  GEOOS, Iraq, Syria
- Minor differences in ReUp, OneUA, and OSUR

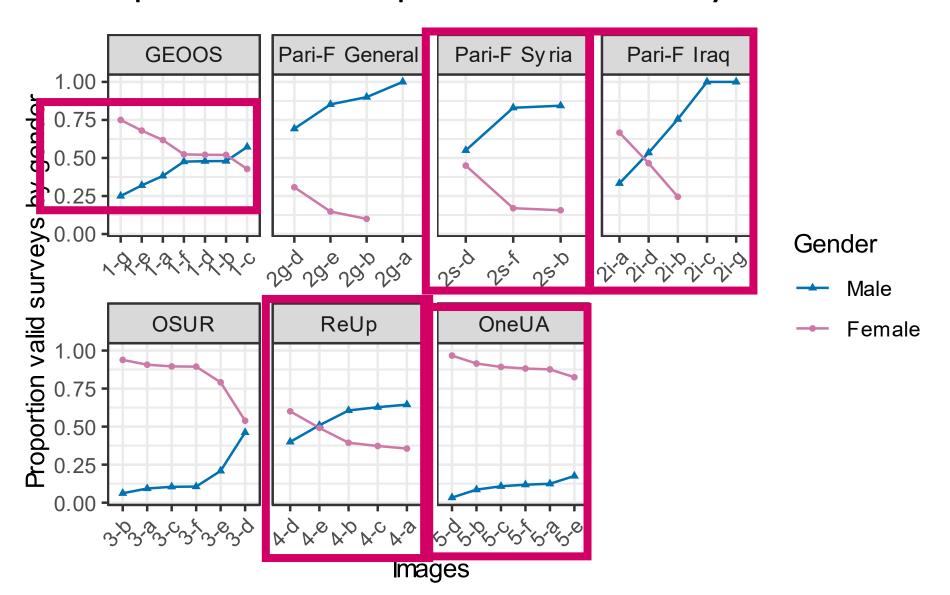


**RQ 1.3** 

### Ad Images & Gender Composition



#### Proportion of Completed Valid Surveys



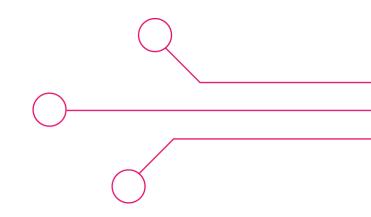
- ➤ Gendered differences are evident but inconsistent across studies
- Some images attract male respondents, others female
- Gender differences are study- and image-specific
- Conclusion: image choice can influence gender composition



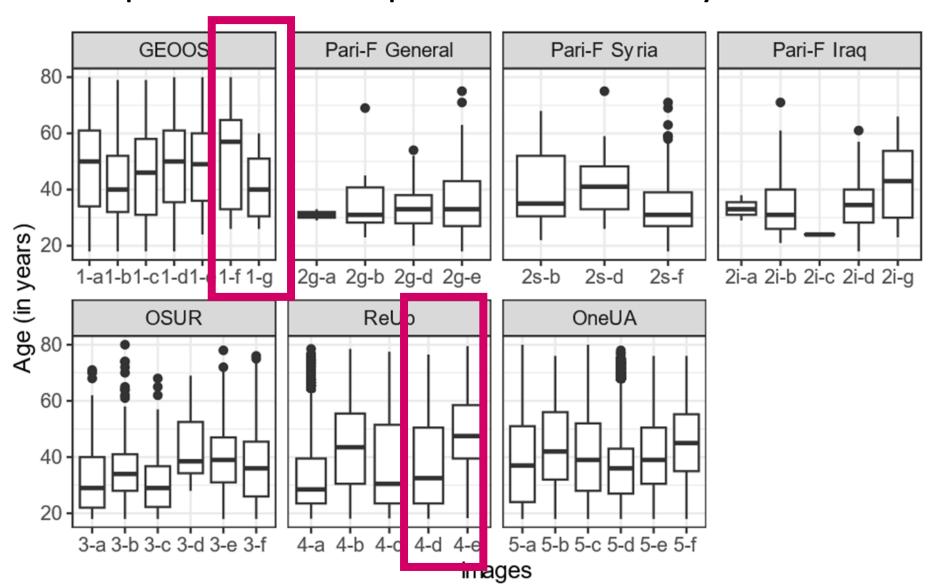
**RQ 1.3** 

**RQ 2.1** 

### Ad Images & Age Composition



#### Proportion of Completed Valid Surveys



- > Age differences are evident across studies
- Some images attract younger respondents, others older
- > Age differences are study- and image-specific
- Conclusion: image choice can influence age composition



**RQ 2.1** 

### Image characteristics

- Focus of 31 ad images manually coded
- Individual(s)
- → Binary variable (Yes / No)
- National/ Supranational Symbol
- → 3 categories: 1 = No reference; 2 = Weak reference; 3 = Strong reference



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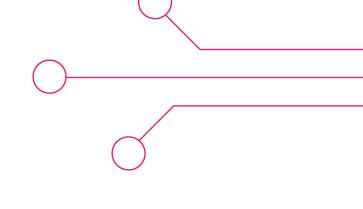
 $\rightarrow$  3 categories: 1 = Positive; 2 = Neutral; 3 = Negative / Melancholic



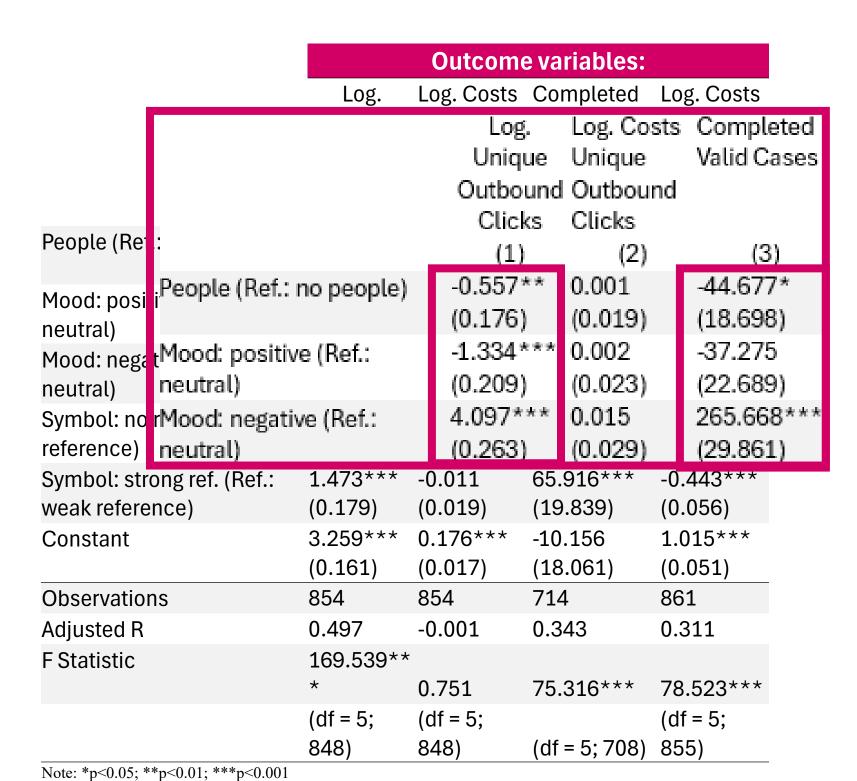
### Image characteristics on Ad Performance

|  | Outcome variables:   |                      |                        |                      |
|--|----------------------|----------------------|------------------------|----------------------|
|  | Log.<br>Unique       | Log. Costs<br>Unique | Completed Valid Cases  | Log. Costs valid     |
|  |                      | Outbound             |                        | survey               |
|  | Clicks<br>(1)        | Clicks (2)           | (3)                    | (4)                  |
| People (Ref.: no people)                   | -0.557**<br>(0.176)  | 0.001 (0.019)        | -44.677*<br>(18.698)   | 0.129* (0.056)       |
| Mood: positive (Ref.: neutral)             | -1.334***<br>(0.209) | 0.002<br>(0.023)     | -37.275<br>(22.689)    | 0.355*** (0.066)     |
| Mood: negative (Ref.: neutral)             | 4.097***<br>(0.263)  | 0.015<br>(0.029)     | 265.668***<br>(29.861) | -0.476***<br>(0.083) |
| Symbol: no ref. (Ref.: weak reference)     | 0.305<br>(0.243)     | -0.039<br>(0.026)    | 175.886***<br>(29.501) | -0.030<br>(0.077)    |
| Symbol: strong ref. (Ref.: weak reference) | 1.473***<br>(0.179)  | -0.011<br>(0.019)    | 65.916***<br>(19.839)  | -0.443***<br>(0.056) |
| Constant                                   | 3.259***<br>(0.161)  | 0.176***<br>(0.017)  | -10.156<br>(18.061)    | 1.015***<br>(0.051)  |
| Observations                               | 854                  | 854                  | 714                    | 861                  |
| Adjusted R                                 | 0.497                | -0.001               | 0.343                  | 0.311                |
| F Statistic                                | 169.539**<br>*       | 0.751                | 75.316***              | 78.523***            |
|  | (df = 5;<br>848)     | (df = 5;<br>848)     | (df = 5; 708)          | (df = 5;<br>855)     |

Note: \*p<0.05; \*\*p<0.01; \*\*\*p<0.001



### Image characteristics on Ad Performance



- ➤ Limages with people → fewer clicks and completions
- ➤ Positive mood → fewer clicks
- ➤ Sompletions
  ➤ Megative mood → more clicks and completions

848)

Note: \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

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848)

### Image characteristics on Ad Performance

|                          |           | Outcome variables: |             |            |  |  |
|--------------------------|-----------|--------------------|-------------|------------|--|--|
|                          | Log.      | Log. Cost          | s Completed | Log. Costs |  |  |
|                          | Unique    | Unique             | Valid Case  | s valid    |  |  |
|                          | Outbound  | Outbound           | d           | survey     |  |  |
|                          | Clicks    | Clicks             |             |            |  |  |
|                          | (1)       | (2)                | (3)         | (4)        |  |  |
| People (Ref.: no people) | -0.557**  | 0.001              | -44.677*    | 0.129*     |  |  |
|                          | (0.176)   | (0.019)            | (18.698)    | (0.056)    |  |  |
| Mood: positive (Ref.:    | -1.334*** | 0.002              | -37.275     | 0.355***   |  |  |
| neutral)                 | (0.209)   | (0.023)            | (22.689)    | (0.066)    |  |  |
| Mood: nogative /Pof:     | / 007***  |                    | 265 669**   |            |  |  |
| Symbol: no ref. (Ref.:   |           |                    | -0.039      | 175.886*** |  |  |
| reference)               | (0.2      | 243) (             | (0.026)     | (29.501)   |  |  |
| Symbol: strong ref. (R   | ef.: 1.4  | 73*** -            | -0.011      | 65.916***  |  |  |
| weak reference)          | (0.1      | L79) (             | (0.019)     | (19.839)   |  |  |
| weak reference)          | (0.1/9)   | (0.019)            | (13.033)    | (ບ.ບວບ)    |  |  |
| Constant                 | 3.259***  | 0.176***           |             | 1.015***   |  |  |
|                          | (0.161)   | (0.017)            | (18.061)    | (0.051)    |  |  |
| Observations             | 854       | 854                | 714         | 861        |  |  |
| Adjusted R               | 0.497     | -0.001             | 0.343       | 0.311      |  |  |
| F Statistic              | 169.539** |                    |             |            |  |  |
|                          | *         | 0.751              | 75.316***   | 78.523***  |  |  |
|                          | (df = 5;  | (df = 5;           |             | (df = 5;   |  |  |

- ➤ Strong national symbols → higher clicks and completions
- No significant effects on cost-related indicators

Source: Hebel, Anna, Steffen Pötzschke, and Bernd Weiß. 2025. Is an image worth a thousand respondents? The relationship between ad images, ad performance, and sample composition in social media recruitment. OSFpreprints. doi: https://doi.org/10.31219/osf.io/af3nr\_v2.

(df = 5; 708) 855)

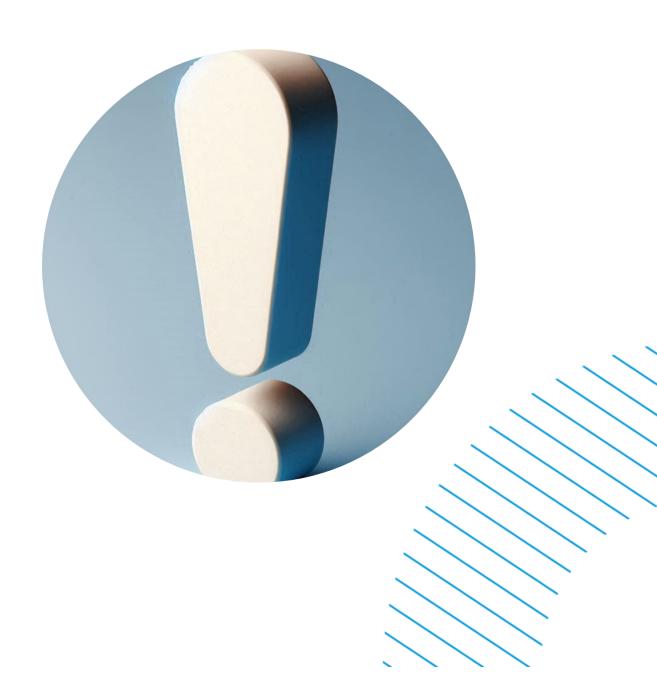
### Research Project 1 - Summary



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#### Ad Performance

- > Some ad images consistently outperform others in engagement and valid completions but not in cost efficiency.
- **Sample Composition**
- ➤ Ad images can shape who participates affecting both gender and age distributions.
- Image Characteristics
- Images with negative mood or strong national symbols attract more clicks, while people or positive tones tend to reduce engagement.





# Research Project 2

Visual design formats in recruitment





Conclusion

### **Research Project 2**

# Static or Animated? How Ad Design Shapes Survey Recruitment

Author: Anna Hebel

Year: 2026

17.11.2025

Publication: Manuscript in preparation (Work in progress)

Preliminary results







### Research Project 2 - Research Questions

- > RQ 1.2: How are different visual elements (static vs. animated) related to sample composition?
- ➤ RQ 2.2: How are different visual elements (static vs. animated) related to response quality?
- ➤ RQ 3.2: How are different visual elements (static vs. animated) related to ad performance?



Conclusion

### Research Project 2 Recruitment & Database

| GESIS Panel.dbd              |                |  |
|------------------------------|----------------|--|
| Target population            | German         |  |
|                              | population 18+ |  |
| Surveyed country             | Germany        |  |
| Year of data collection      | 2023           |  |
| Field period in days (Survey | )41            |  |
| Ad budget (EUR)              | 16,200         |  |
| Number of visual elements    | 8              |  |
| Sample size                  | 1,206          |  |

Visual elements static 1, 2, 3, 4 Younger women Visual elements static 1,2,3,4 Younger men Visual elements Adset static static 1, 2, 3, 4 Older women Visual elements static 1, 2, 3, 4 Oldermen Visual elements Campaign animated 5, 6, 7, 8 Younger women Visual elements animated 5,6,7,8 Younger men Visual elements Adset animated animated 5,6,7,8 Older women Visual elements animated 5, 6, 7, 8 Oldermen

More Information about the panel on: <a href="https://www.gesis.org/en/gesis-panel">https://www.gesis.org/en/gesis-panel</a>

## Static & Animated Ad Images



🛂 Help society 🎞



- > 4 different advertising images, each animated and static
- > Only simple motion effect
- > Show 3 different survey motivations



## **Animated & Static Images**



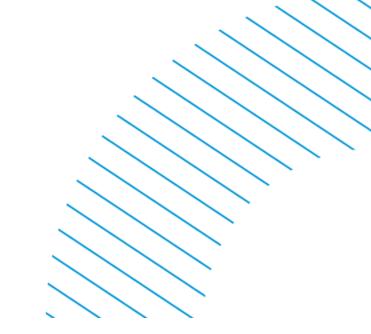
Your participation will be rewarded

Help science

Your participation will be rewarded







Conclusion

## Research Project 2 - Variables









- Sample Composition
- Age

- Gender
- Education



- Response Quality
- Item-nonresponse
- Extreme response time
- Break-off



- Ad Performance
- Unique outbound clicks
- Cost per unique outbound click
- Completed valid surveys
- Cost per completed valid survey



### Visual Elements & Gender Composition

**RQ 1.3** 





- ➤ Animated ads → higher share of men
- ➤ Static ads → higher share of women
- Highlights potential gender bias by visual elements

Preliminary results



Gender

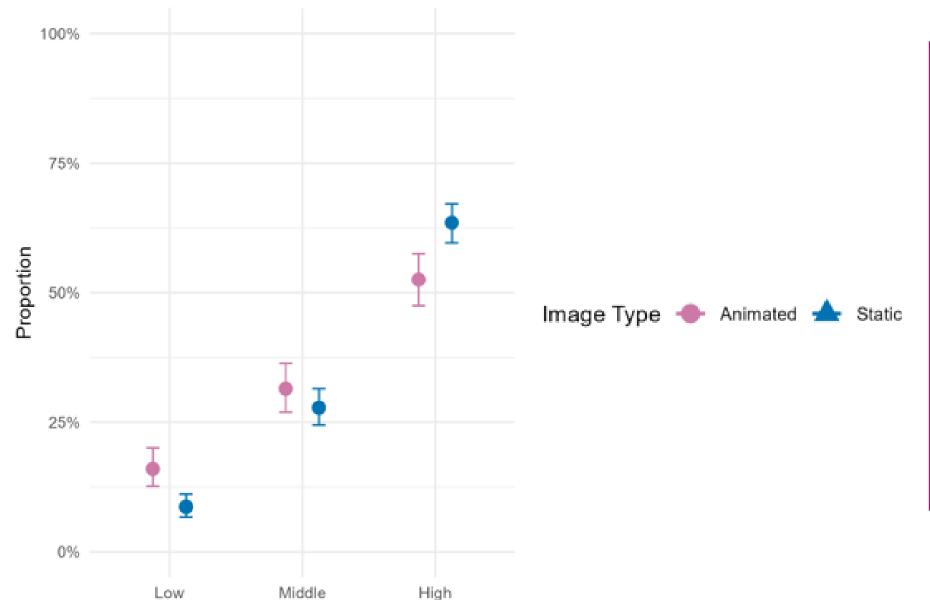




**RQ 2.3** 

### Visual Elements & Education Composition

#### Proportion of Completed Valid Surveys by Education



Valid completions only; proportions sum to 100% for each image type

Education Category

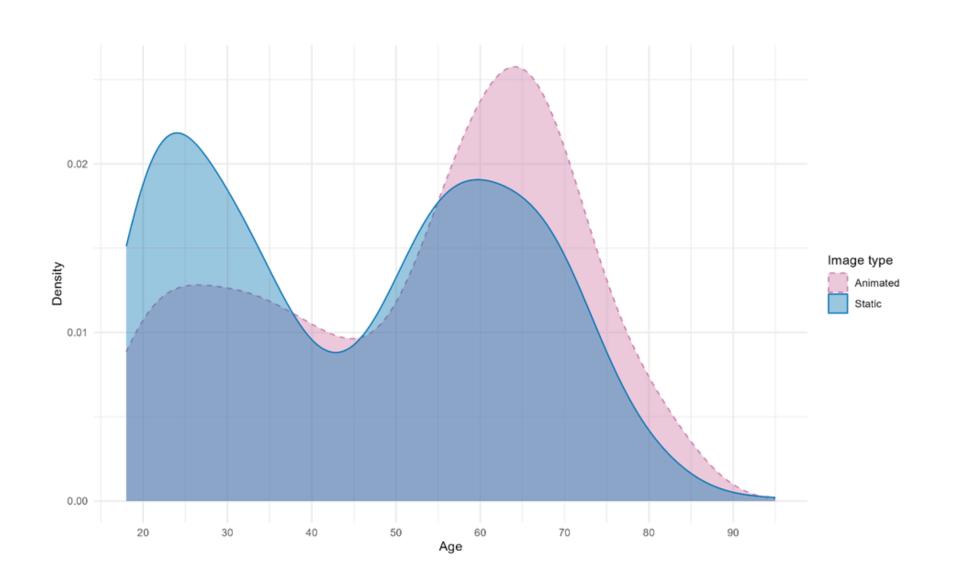
- ➤ Animated ads → more respondents with low and medium education
- ➤ Static ads → higher share of respondents with high education
- Highlights potential education bias by visual elements





### Visual Elements & Age Composition

#### Distribution of Age by Visual Elements



- ➤ Static ads → higher share of younger respondents (~25 years)
- ➤ Animated ads → more older respondents (~60 years)
- Both: lower proportion in mid-adulthood (~40 years)
- Highlights potential age bias by visual elements

Preliminary results

Wilcoxon rank-sum test W = 139,801, p < 0.001

Conclusion

#### Visual Elements & Response Quality

| Indicator                            | Animated | Static | Key finding                                  |
|--------------------------------------|----------|--------|--|
| Item non-response                    | 0.2%     | 0.2%   | No difference                                |
| Extreme response time (10% quantile) | 17%      | 22%    | More extreme response time for static images |
| Break-off rate                       | 79%      | 70%    | Higher break-off rate for animated images    |



**RQ 2.2** 

#### **Visual Elements & Ad Performance**

#### Ad Performance: Static vs. Animated Image



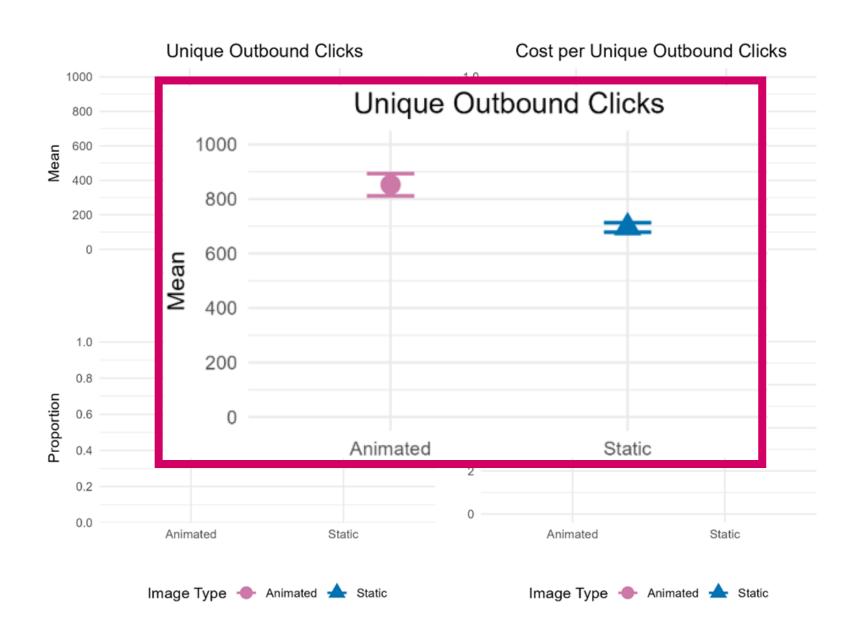
- Unique outbound clicks
- Cost per click
- Completed valid surveys
- Cost per completed survey





#### **Visual Elements & Ad Performance**

Mean Unique Outbound Clicks: Static vs. Animated



Wilcoxon rank-sum test, W = 155,039, p < 0.001

17.11.2025

Animated ads -> more unique outbound clicks

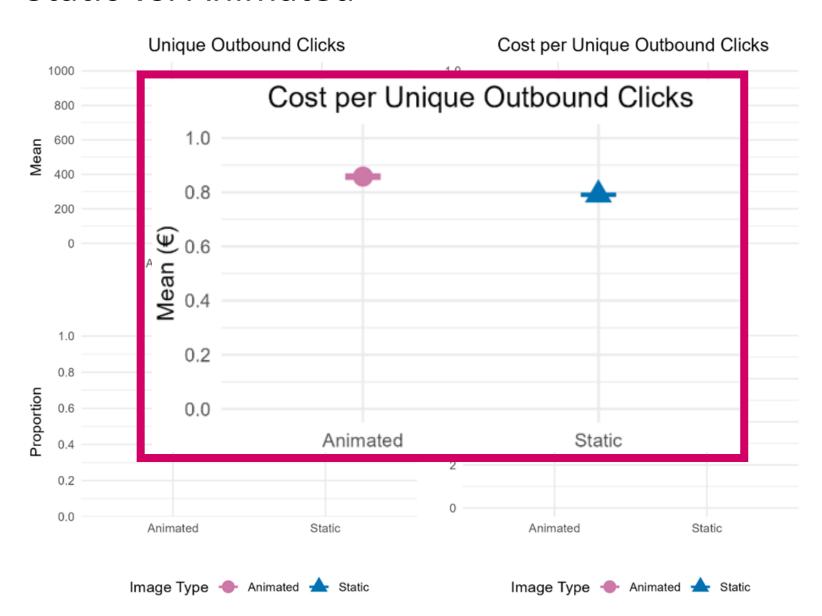




#### **Visual Elements & Ad Performance**

**RQ 1.2** 

Cost per Mean Unique Outbound Clicks: Static vs. Animated

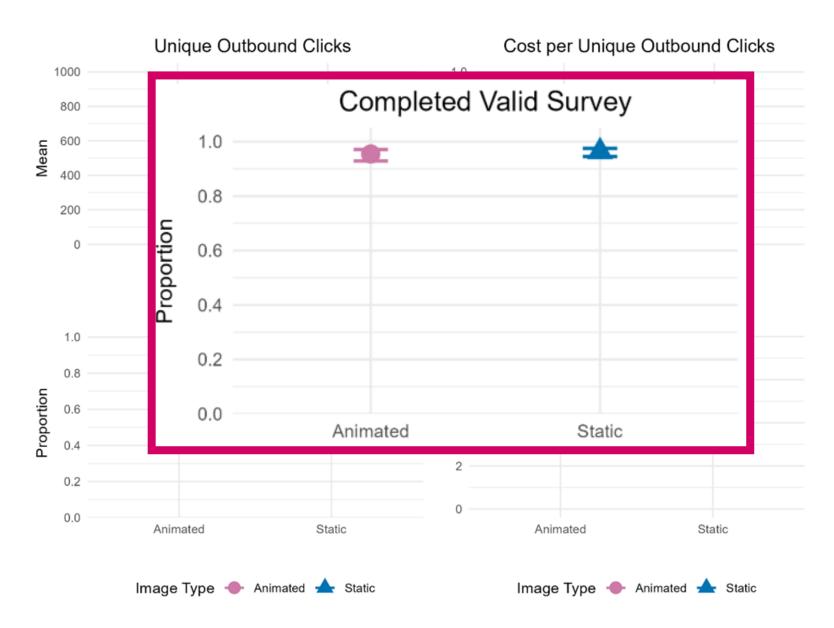


Wilcoxon rank-sum test, W = 231,346, p < 0.001



#### **Visual Elements & Ad Performance**

Completed Valid Survey: Static vs. Animated



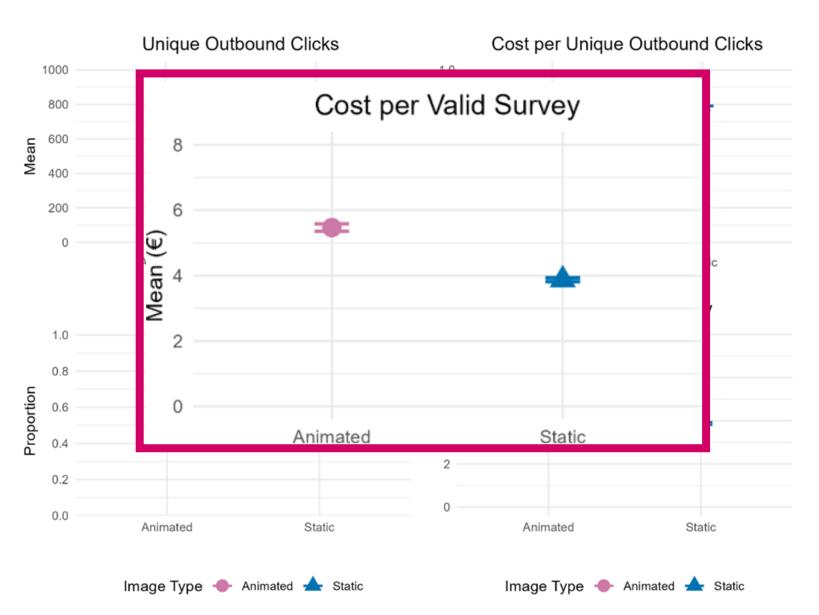
 $\chi^2 = 0.27$ , p = 0.6



No meaningful difference

#### **Visual Elements & Ad Performance**

Cost per Completed Valid Survey: Static vs. Animated



Wilcoxon rank-sum test, W = 218,343, p < 0.001



### Research Project 2 - Summary

- **Sample Composition**
- > Ad format affects who participates (gender, age, education).
- Response Quality
- ➤ Static ads → more extreme response times
- ➤ Animated ads → higher dropout rates
- Performance
- > Animated = more Link-clicks
- > Static = more cost-efficient





## Conclusion





#### **Overall Conclusion**

- Content & format III influence recruitment outcomes
- Affects engagement and cost-efficiency
- Who participates (gender, age, education)
- How participating (response quality, completion)



#### **Practical Recommendations**

- > Evaluate multiple indicators
- Content
  - Use national symbols if topic relates to a country or nation
  - ➤ Melancholic/sad tone → works for sensitive topics
  - > Positive tone > didn't work here
- Use a mix of static and animated images to reach different population



### **Outlook Predicting Ad Image Success with AI**

**RQ 1.3** 

- Predictability: Exploring how AI might help anticipate ad image performance
- Optimization: Can AI help with ad design decisions?





## Thank you for your attention!







## **Animated & Static Images**





















# Images GEOOS (Study 2)



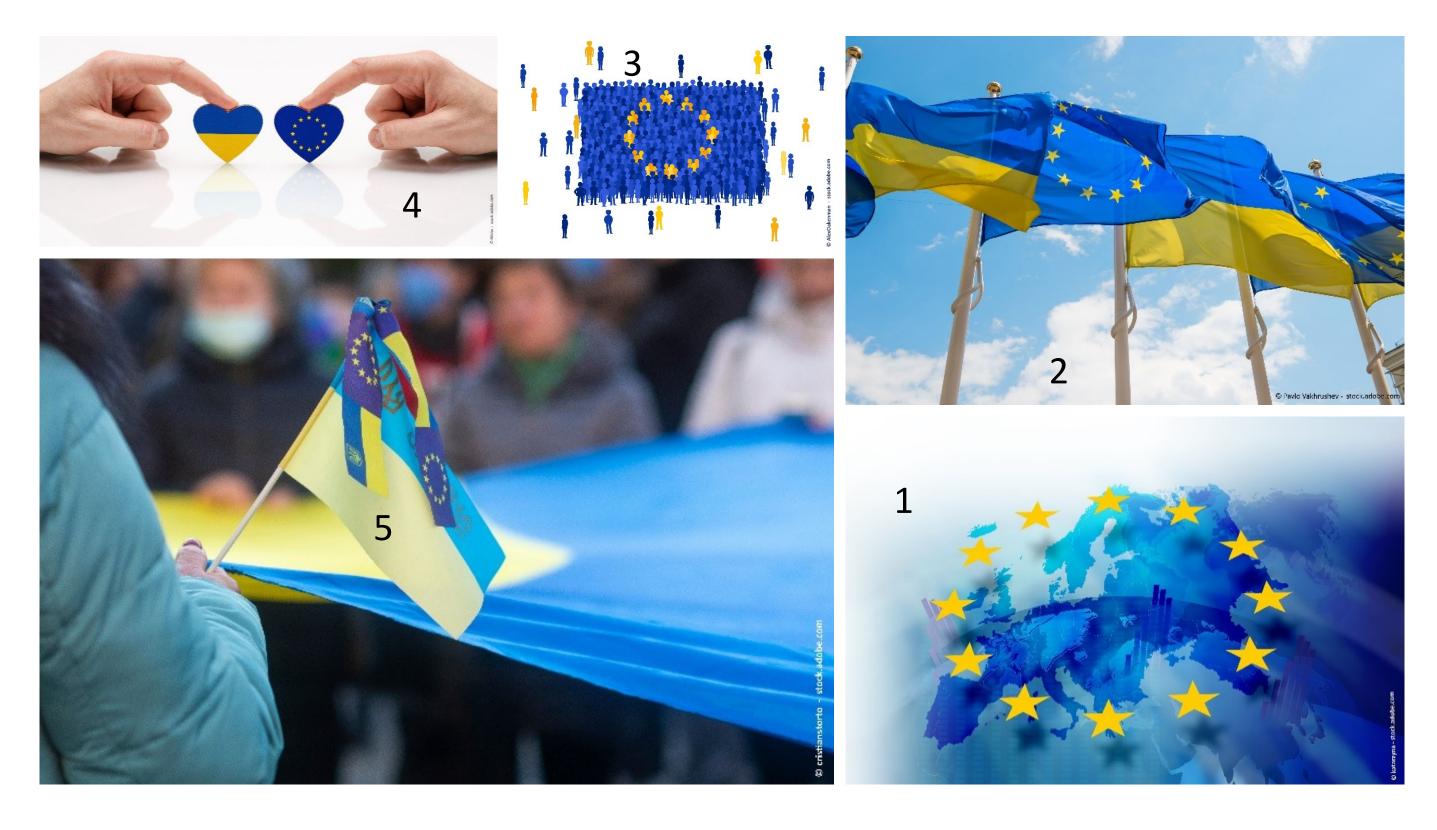


## Images OneUA (study 1)





# Images ReUp (study 4)





# Images GEOOS (Study 2)

