(UN)INFORMED CONSENT: STUDYING GDPR CONSENT NOTICES IN THE FIELD

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CONSENT NOTICES
a.k.a. cookie banners, cookie notices, privacy notices, ...

- Legal foundation:
  - 2009 amendment to Article 5(3) of the ePrivacy Directive
  - Article 6 (1)(a) GDPR: consent as one of six legal bases for the processing of personal data

- Prevalence [1]:
  - 46.1 % in January 2018
  - 62.1 % after GDPR enforcement date

### VARYING COMPLEXITY

This site uses cookies: Find out more.  Okay, thanks

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**COOKIE SETTINGS**

This website uses cookies to optimize your user experience. Please select your desired cookie setting:

- **FUNCTIONAL**
  Functional cookies are required for the website to operate correctly. These cookies cannot be disabled.
  - This is the default setting for your country.

- **OPTIMIZED**
  Optimization cookies allow us to analyze site usage so we can measure and improve our website.

- **PERSONALIZED**
  Personalization cookies are used for social media and advanced personalization. They allow us to show you information related to your company.

**EXAMPLE FUNCTIONALITY ALLOWED**
- Store country preference
- Store language preference

**EXAMPLE FUNCTIONALITY NOT ALLOWED**
- Saving personal data
- Anonymous tracking via Google Analytics
- Tracking for remarketing purposes

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### AML cookie settings

In the table below, you can change the cookie settings on the pages of AdriaMedia Ljubljana. When turning off cookies for a single page, all your own ('1st party') cookies are deleted. Exceptions are the 'csrf_token' cookie (described in the cookie table) and 'hascookie' in which you stored. You can delete other ('3rd party') cookies in your browser settings, or where managers allow it, with opt-out connections. You can find them at the end of this page.

<table>
<thead>
<tr>
<th>Page</th>
<th>Condition</th>
<th>On</th>
<th>Off</th>
<th>Delete settings</th>
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<td>plugin-magazine.com</td>
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STUDYING CONSENT NOTICES “IN THE FIELD”

- Between-subjects study with visitors of a German e-commerce website
- Website: ~ 15–20K unique visitors per month, mostly single-page

- Modified WordPress plugin
- 3 experiments conducted iteratively from Nov 2018 – Mar 2019
Sample & inspect 1000 real-world consent notices, identify design space
From bartering to contactless. Payments made easier.

Since introducing Scotland’s first banknote in 1696 to bringing you Visa contactless, we’ve always made payments easier.

Discover contactless payments →

Terms, conditions and eligibilities apply.
UI PARAMETERS

- nudging / dark patterns?

- text formatting

- choices

- link to privacy policy / additional information
Sample & inspect 1000 real-world consent notices, identify design space

Experiment 1: Position

Experiment 2: Choices / nudging

Experiment 3: Privacy policy link / (non) technical language
User visits website
User is shown 1 of n consent notices. Plugin logs all interactions with notice
User clicks consent notice
30 seconds without user interaction
Notice is replaced with invitation to survey
Behavior- / notice-specific survey
EXPERIMENT 1 - POSITION

top left, “dialog” (0 % in sample)

bottom left, “dialog” (3.7 %)

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Accept
Decline

bottom right, “dialog” (3.0 %)

top, “bar” (27 %)

top right, “dialog” (0.2 %)

bottom, “bar” (57.9 %)
**EXPERIMENT 1: RESULTS**

- 30 Nov – 18 Dec 2018 (19 days)
- ~ 14K website visitors, ~ 80% mobile
- Higher interaction rates on mobile devices
- Highest interaction rate: bottom left
- Possible explanations:
  - notice is more likely to cover website content
  - bottom position easier to reach on smartphones
EXPERIMENT 2 – CHOICES & NUDGING

- Choices: binary
- Nudging: no ("Accept" and "Refuse" buttons look the same)
EXPERIMENT 2 – CHOICES & NUDGING

- Choices: confirmation (visible)
- Nudging:
EXPERIMENT 2 – CHOICES & NUDGING

- Choices: confirmation (visible) / categories (hidden)
- Nudging: yes ("OK" button highlighted, "Settings" link hard to see, pre-ticked checkboxes)
EXPERIMENT 2: NOTICES

non-nudging

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Accept

Decline

No option (26.3 %)
Confirmation (59.9 %)
Binary (4.0 %)
Categories (8.1 %)
Vendors (1.1 %)

nudging

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Accept

Decline

[This website] uses cookies to analyze your usage of this site, to embed videos and social media, and to personalize the ads you see. Please select which of our partners you allow to use cookies. You can find more information in our Privacy Policy.

Google Ads
Google Analytics
YouTube
Facebook
Google Fonts
Ionic

Submit
EXPERIMENT 2: RESULTS

- 19 Dec 2018 – 28 Jan 2019 (41 days)
- ~37K website visitors
- Less options ⇒ higher interaction
- Strong impact of nudging / preselections
EXPERIMENT 2: SELECTIONS

Opt-in

Opt-out

Absolute

Facebook  Google Ads  Google Analytics  Google fonts  Ionic  Youtube  Privacy Policy  Submit

0.8% 1% 0.8% 0.7% 0.9% 1.3% 0.6%

10.3% 10% 10% 10% 10% 10% 10%

35.1%
## EXPERIMENT 3 – LANGUAGE & PP LINK

<table>
<thead>
<tr>
<th></th>
<th>privacy policy link (92.3 %)</th>
<th>no privacy policy link (6.6 %)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Privacy Policy dialog box" /></td>
<td><img src="image2.png" alt="Privacy Policy dialog box" /></td>
</tr>
<tr>
<td></td>
<td><img src="image3.png" alt="Submit button" /></td>
<td><img src="image4.png" alt="Submit button" /></td>
</tr>
<tr>
<td>technical (&quot;cookies&quot;)</td>
<td><img src="image5.png" alt="Dialog box for technical content" /></td>
<td><img src="image6.png" alt="Dialog box for technical content" /></td>
</tr>
<tr>
<td></td>
<td>(96.4 % in sample)</td>
<td>(96.4 % in sample)</td>
</tr>
<tr>
<td>non-technical (&quot;data&quot;)</td>
<td><img src="image7.png" alt="Dialog box for non-technical content" /></td>
<td><img src="image8.png" alt="Dialog box for non-technical content" /></td>
</tr>
<tr>
<td></td>
<td>(3 %)</td>
<td>(3 %)</td>
</tr>
</tbody>
</table>

[This website] uses cookies to analyze your usage of this site, to embed videos and social media, and to personalize the ads you see. Please select for which purposes we are allowed to use your data. You can find more information in our Privacy Policy.

- **Necessary**
- **Analytics**
- **Personalization & Design**
- **Marketing**
- **Social Media**
- **Analytics**

[This website] collects your data to analyze your usage of this site, to embed videos and social media, and to personalize the ads you see. Please select for which purposes we are allowed to use your data. You can find more information in our Privacy Policy.

- **Necessary**
- **Analytics**
- **Personalization & Design**
- **Marketing**
- **Social Media**
EXPERIMENT 3: RESULTS

- 29 Jan 2019 – 15 Mar 2019 (46 days)
- ~ 32K website visitors
- PP link: no significant effect
- Slightly higher interaction rates with technical language ("cookies")
- Habituation effect?

![Graph showing the percentage of visitors in different categories with and without PP-Link and "Data" or "Cookies".]
SURVEY RESULTS

- Link to survey was clicked by 804 visitors (0.97 %)
- Responses: 110 (0.13 %)
SURVEY: MOTIVATION FOR CLICKING

1. annoyed
2. website does not work otherwise
3. habituation
4. privacy
5. security
6. less ads
SURVEY: MOTIVATION FOR NOT CLICKING

1. did not see notice
2. no effect
3. do not care
4. not enough choices
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- [ ] Necessary
- [ ] Analytics
- [ ] Social Media
- [ ] Marketing
- [ ] Personalization & Design

Submit

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- [ ] Ionic
- [ ] Google Analytics
- [ ] YouTube
- [ ] Google Fonts
- [ ] Google Ads
- [ ] Facebook

Submit
SURVEY: COMPLEX CONSENT NOTICES

- transparency

“[I liked that] I could directly select the options without going to the settings. It would be great if this was the default” (P3-171)

“I like [...] that only [the] necessary option is selected and all of the others are deactivated” (P3-88)

“Having options makes me feel secure” (P2-619)
SURVEY: COMPLEX CONSENT NOTICES

- options unclear

“Necessary [...] does not say much. Cookies aren’t necessary to view a website” (P3-215)

“Something could be hidden [behind the Necessary category]” (P2-557)
SURVEY: UNDERSTANDING OF CONSENT NOTICES

Q7: What do you think happens when you click “Decline“?
1. website cannot be accessed
2. website functionality is limited
3. no change
4. no cookies stored
5. no data collected
6. website can be accessed

Q8: What do you think happens when you click “Accept“?
1. data collected
2. ads
3. profiling
4. cookies stored

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TAKEAWAYS

- Influence of UI parameters on interaction rate?
  - Position: +
  - Nudging / preselections: ++
  - Privacy policy link: -
  - Wording: 0

- Hints in survey: categories > vendors (in line with GDPR, also recommended by various DPAs)

- Misconceptions about how consent notices work
  - Site cannot be accessed unless consent is given ⇒ inform about functionality limitations
  - No data collected before a decision is made (“privacy by default”)
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GitHub
https://github.com/RUB-SysSec/uninformed-consent

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