

Studying the effect of personalized feedback and control during app-based data collection

***MASS workshop 2026 – Barcelona
June 4-5, 2026***

Background

- Apps increasingly used
 - Very useful in longitudinal context
 - Decreased burden; Precise measurement through sensors
- Challenge to obtain good app uptake & retention
- Privacy concerns strong reason for non-participation
 - Dissatisfaction with data flow
 - Data flow subjective to change in longitudinal data collection

Privacy in context (Nissenbaum, 2009)

Data flow consists of:

- Sender of the data
- Receiver of the data
- Person the data concerns
- Type of information
- Transmission principles

Tackling privacy concerns

- More participant centered data collection process through apps
 - Control over data collection process (Bemmann et al., 2022; Wenz & Keusch, 2023)
 - Personalized feedback (Kühne & Kroh, 2018; Wenz et al., 2022))
- Control over data collection
 - Control functionalities to alter data flow
 - Stronger effect with more flexibility in control? (Brandimarte et al., 2013)
- Personalized feedback
 - Multiple reasons:
 - learning opportunity (engagement; data quality)
 - transparency on collected data (trust; privacy concerns)
 - Is learning opportunity actual working mechanism?

Research questions – Control over data collection

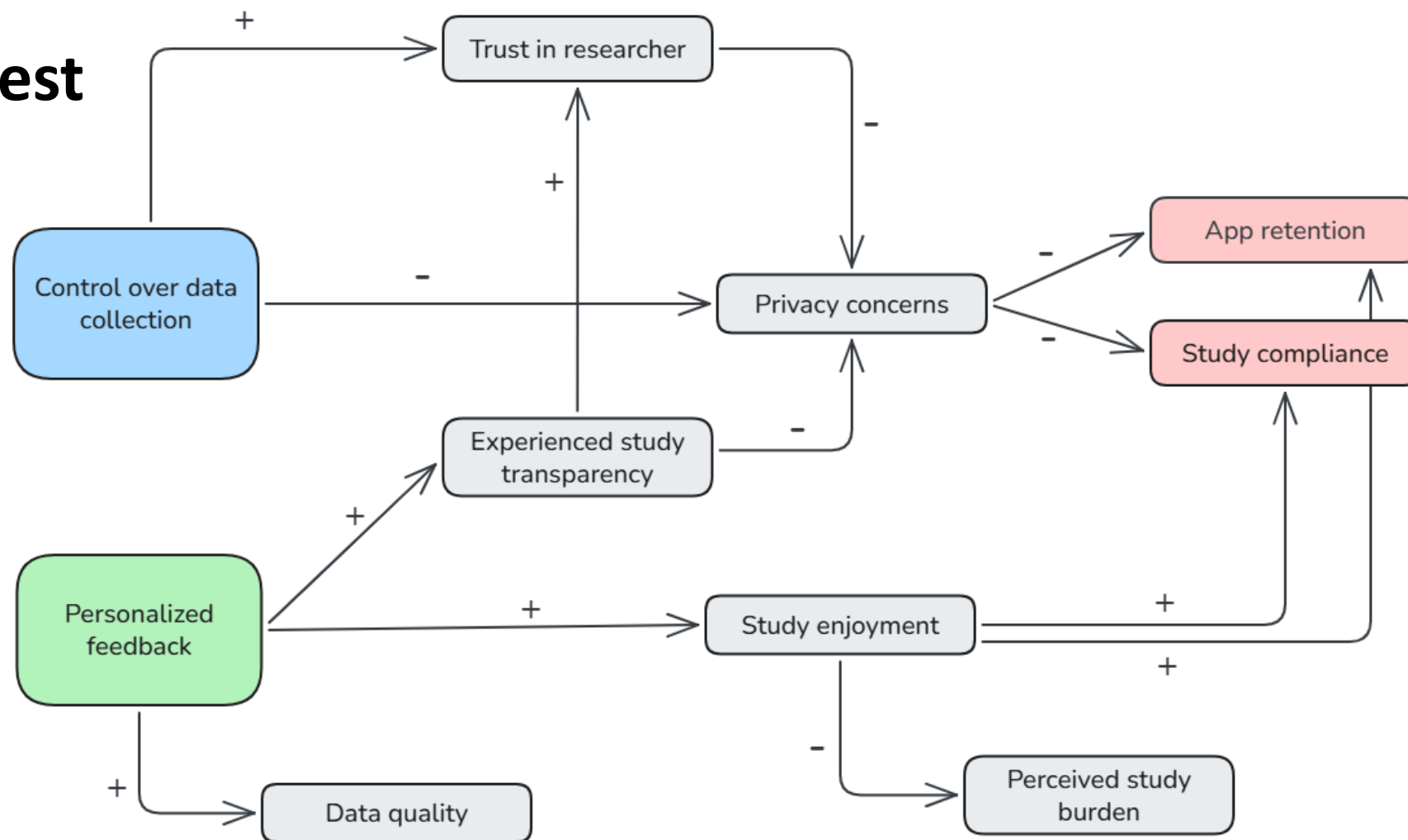
1. What is the effect of **control functionalities** on *privacy concerns*, *trust*, *app-retention*, and *study compliance*?
2. How does the effect of control functionalities on *privacy concerns*, *trust*, *app-retention*, and *study compliance* changes over the **flexibility of the control functionalities**?
3. How often and when do participants make use of the control functionalities?

Research questions – Personalized feedback

1. Does providing **personalized feedback** in app-based data collection lead to higher *app-retention* and higher *study compliance*?
2. Does **personalized feedback** affect the *study enjoyment*, *data quality*, *perceived study burden*, *experienced transparency*, and *privacy concerns*?
3. Are the effects of personalized feedback dependent on the **amount of new information** that the feedback holds?



Relations of interest



Study set-up

- Data collection in the LISS panel – Fall 2026
 - Field study of the Next app (Presentation: Mulder et al.).
- Substantive topic: *how does affective state relate to location and environment?*
- 2 weeks of data collection
 - EMA 5 times a day: affective state; people & activity
 - Geolocation moment of answering EMA
- App includes control functionalities & personalized feedback

Methodological experiments

Control functionalities:

- No control functionalities
- Low flexible control (pausing & deletion)
- High flexible control (pausing & deletion)

- Pausing for set duration
- Deleting current day

- Select data type and duration of pause
- Deleting selected data points of current day

Personalized feedback:

- No personalized feedback / reviewing of data
- Low informative feedback (summary of current day)
- High informative feedback (summary over time & combined sources)

- Average of today's affect questions
- Locations of all EMA locations

- Average affect questions over time
- Locations color-coded on happiness

Discussion

- Findings on control/feedback → Guiding Next app implementations
- Are the experiments set up well enough? Should feedback or control have a different implementation?
- Viewing raw data/answers → feedback or not?
- Are cofounders / important relations missing from the model? Are the assumed relations all logical?

References

- Bemmann, F., Windl, M., Erbe, J., Mayer, S., & Hussmann, H. (2022). The influence of transparency and control on the willingness of data sharing in adaptive mobile apps. *Proceedings of the ACM on Human-Computer Interaction*, 6 (MHCI), 1–26. <https://doi.org/10.1145/3546724>
- Brandimarte, L., Acquisti, A., & Loewenstein, G. (2013). Misplaced confidences: Privacy and the control paradox. *Social psychological and personality science*, 4 (3), 340–347. <https://doi.org/10.1177/1948550612455931>
- Kühne, S., & Kroh, M. (2018). Personalized feedback in web surveys: Does it affect respondents' motivation and data quality? *Social Science Computer Review*, 36 (6), 744–755. <https://doi.org/10.1177/0894439316673604>
- Nissenbaum, H. (2009). *Privacy in context: Technology, policy, and the integrity of social life*. In Privacy in context. Stanford University Press.
- Wenz, A., Jäckle, A., Burton, J., & Couper, M. P. (2022). The effects of personalized feedback on participation and reporting in mobile app data collection. *Social Science Computer Review*, 40 (1), 165–178. <https://doi.org/10.1177/0894439320914261>
- Wenz, A., & Keusch, F. (2023). Increasing the acceptance of smartphone-based data collection. *Public Opinion Quarterly*, 87 (2), 357–388. <https://doi.org/10.1093/poq/nfad019>

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Thank you for your attention!

Questions?



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Your Responses Over Time

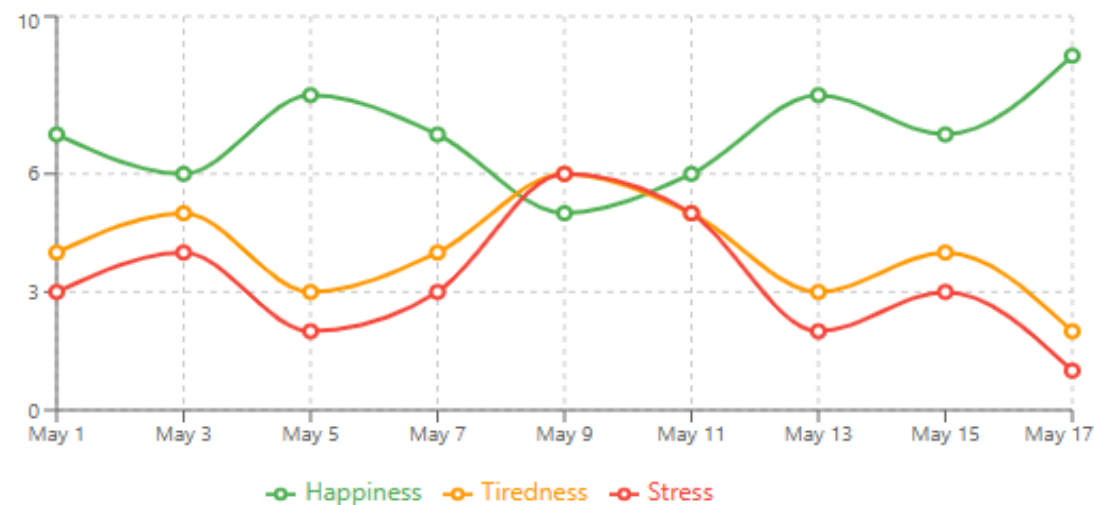
ALL HAPPINESS TIREDNESS STRESS **MAP**

Locations where you answered questions, color-coded by happiness level



Your Responses Over Time

ALL HAPPINESS TIREDNESS STRESS MAP



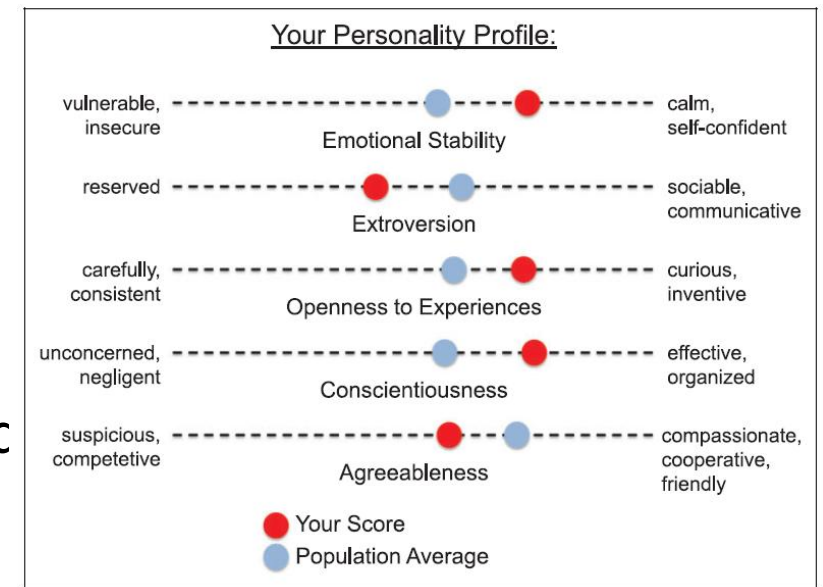
9 survey responses • Scale: 0-10

Personalized feedback

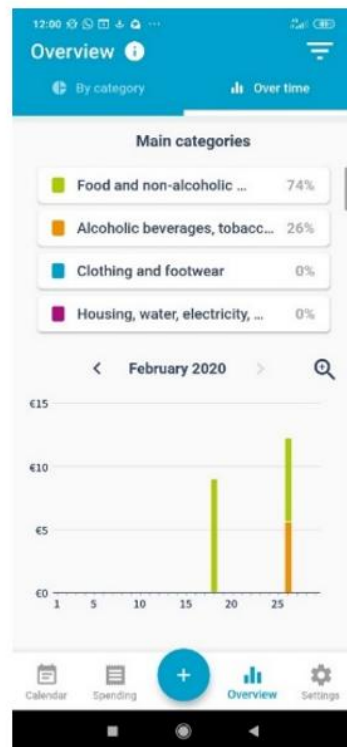
Providing information back to users / collected



Wenz et al., 2022



Kuhne & Kroh, 2018



Data Type Information

The following information may be derived from your **app usage data**:

- Your preferences and hobbies, e.g. if you use sports-specific apps.
- Routines such as "You check your Facebook timeline extensively every evening".

By combining your **app usage data** with your **activity data**, more conclusions could be drawn, such as "You answer chat messages more often on the train."

Bemmann, 2022

Raw Data

```
{
  "activityHash": "f22cd135-fb20-4966-aeac-4ccd25122bf8",
  "activityName": "APPS",
  "event": "2 (UNKNOWN)",
  "name": "Spotify",
  "packageName": "com.spotify.music",
  "timestamp": 1642421965779,
  "timezoneOffset": 3600000,
  "uploadPermitted": true,
  "uploaded": "2022-01-17T12:19:25.779Z",
  "clientId": 18063
}
```