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Series D – Variable Descriptions and Coding

SOEP-IS 2023 – DIPS3_DAILY: Daily Diaries and Smartphone Sensing on the Daily Level (DIPS Project)

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Contents

1 Introduction

Overall Project Description

The DIPS3 study was part of a larger DFG-funded project on "Personality and social relationship dynamics: Short- and medium-term processes in daily life" with Cornelia Wrzus and David Richter as principal investigators. This project had the overall goal to investigate the dynamic, interdependent short-term and medium-term processes that define multiple social relationships and to better understand how these processes differ between people depending on diverse personality characteristics. To this aim, several modes of data collection were employed jointly, such as active daily diary assessments and passive smartphone sensing of behavioral indicators related to social contact (for measurement properties of these social contact indicators, see Roos et al., 2023). The project was given Institutional Review Board approval by Johannes Gutenberg University Mainz (Process Number: 2018JGU-psychEK-002).

DIPS3 Data Collection

The third part of data collection within this project was integrated into the SOEP-IS in wave 2022 with the goal of recruiting members of this already existing panel study to take part in an additional, opt-in data collection with a smartphone app. As reported in Roos et al. (2024), 2,507 participants took part in the SOEP-IS study in 2022 of which 1,322 (53%) reported initial interest in the smartphone study and 844 (34%) fulfilled all requirements (i.e., regularly using a smartphone running on Android Version 6.1 or higher). Finally, roughly 15% of the 2022 SOEP-IS sample, that is, N = 386 participants, took part in the 14-day smartphone study and answered at least one daily diary. A detailed examination of sample selectiviy and different person-related sampling biases associated with selection into mobile sensing studies (including the DIPS3 study) will be available in Schoedel et al. (2024).
At the end of the 2022 interview, SOEP-IS respondents were asked if they owned a smartphone running on Android OS Version 6.1 or higher and if they were interested in participating in an additional 14-day smartphone study. Those who agreed to participate were sent a postal invitation to take part in the study along with instructions on how to install and set up the PhoneStudy app which runs on Android OS (for more information on the app, see https://phonestudy.org/en/). Respondents were informed during the onboarding process about the study procedure and data protection. Informed consent was obtained during the setup of the app.
After the installation of the app, respondents received daily notifications to fill out a brief questionnaire on their mood and social interactions each evening for 14 days. Questionnaires were available each day from 8:00 p.m. to 4:00 a.m. of the following day. Respondents were instructed to answer the questionnaire right before going to bed and received up to two reminders between 8:00 p.m. and 12:00 a.m.. Additionally, smartphone sensing ran on the respondents' phones, passively gathering data on anonymized social interactions, phone and app usage, and contact entries . Respondents received 40€ for participation.
Additional study documentation materials including the wording of all items in English and German, the recruitment flyer, and a report on different app versions can be found on https://osf.io/zhc49/. Here, we only present the translated, English version of the items.

Daily-Level Data

Raw data of smartphone sensing cannot be shared publicly due to privacy concerns and potential identification of respondents due to the richness of these data, especially when

linked with the SOEP-IS panel data. Therefore, for this data release, we selected only the most meaningful behavioral indicators and aggregated them over time.
The first of the three DIPS3 datasets includes the daily diary items and presents the smartphone sensing data on the daily level with each individual observation starting at 4:00 a.m. and ending in the evening at the time stamp when the respondent started to answer their daily diary survey on the research app. The observation period ran over 14 days after app installation, with only very few respondents answering a survey on the 15th day after previously skipping a daily diary. The purpose of this aggregation time window was that the time over which the smartphone sensing indicators are aggregated now roughly correspondends to the time that respondents reported on when answering the daily diaries. Thereby, concurrent associations between smartphone sensing indicators (e.g., communication app usage) and daily diary answers (e.g., mood) can easily be examined.
For the other two datasets, see:
Aggregated on the hourly level:
https://www.diw.de/documents/publikationen/73/diw_01.c.936886.de/diw_ssp1431.pdf
Short surveys after calls
https://www.diw.de/documents/publikationen/73/diw_01.c.936889.de/diw_ssp1432.pdf
Data can be linked via the "pid" and "n_days" identifiers.

References

Roos, Y., Krämer, M. D., Richter, D., Schoedel, R., & Wrzus, C. (2023). Does Your Smartphone "Know" Your Social Life? A Methodological Comparison of Day Reconstruction, Experience Sampling, and Mobile Sensing. Advances in Methods and Practices in Psychological Science, 6(3), 1–12.
https://doi.org/10.1177/25152459231178738
Roos, Y., Krämer, M. D., Richter, D., & Wrzus, C. (2024). Persons in contexts: The role of social networks and social density for the dynamic regulation of face-to-face interactions in daily life. Journal of Personality and Social Psychology.
Advance online publication. https://doi.org/10.1037/pspp0000512
Schoedel, R., Reiter, T., Krämer, M. D., Roos, Y., Bühner, M., Richter, D., Mehl, M. R., & Wrzus, C. (2024). Person-Related Selection Bias in Mobile Sensing Research: Robust Findings from Two Panel Studies [Manuscript submitted for publication].

2 Identifiers

Data was processed by adding general identifiers to track study progress over time and provide easier filtering. ESM episodes are defined as starting at 4 a.m. and ending when that day's questionnaire was answered. Thus, they approximately cover the time awake that is retrospectively covered by each daily diary.

pid – Person ID

1233703	10
1247702	14
1344403	11
2001401	10
2012702	9
2037404	14

2043004		14
...	(372 rows omitted)	4409
41824401		14
41824901		7
41827601		11
41830701		10
41830702		11
41831501		11
41833601		13

Same person identifier as in SOEP-IS data files

subsample – Subsample

0	[0] no	3750
1	[1] yes	818

During the study period, an older, outdated app version was distributed for a restricted time window due to a technical error (N = 72 with outdated version; N = 313 with correct version). This older app version differed slightly in some wordings of the daily diary items. Here, we present documentation for the correct app version that the majority of respondents installed. For more details on this matter and an extensive comparison of the two app versions, see OSF repository.
https://osf.io/zhc49/

syear – Survey Year

2022	4568

n_diary – Questionnaire Count

1	386
2	383
3	378
4	376
5	370
6	364
7	362
8	356
9	346
10	331
11	310
12	266
13	213
14	127

Counts the number of answered daily diaries starting at 1.

n_days – Study Day Count

1	386
2	332
3	337
4	343
5	332
6	337
7	339
8	326
9	315
10	318
11	312
12	307
13	294
14	274
15	16

Counts the number of days after installation starting with 1 at the day after installation where the first daily diary was available to be answered. In contrast to n_diary, this variable takes into account when respondents fill out a questionnaire the following day or have gaps when they skipped a questionnaire. Negative values indicate days before a person answered their first daily diary.

day – Day of the Week

0	[0] Monday	673
1	[1] Tuesday	661
2	[2] Wednesday	648
3	[3] Thursday	646
4	[4] Friday	648
5	[5] Saturday	637
6	[6] Sunday	655

weekend – Weekend

0	[0] no	3276
1	[1] yes	1292

ep_start – Start of Episode

04:00:00	4568

Marks the beginning of the episode on each day across which all the mobile sensing variables are aggregated.

ep_end – End of Episode

00:00:56		1
00:00:58		1
00:02:37		1
00:02:49		1
00:03:11		1
00:03:14		1
00:03:31		1
...	(3626 rows omitted)	4554
23:57:44		1
23:58:23		1
23:58:26		1
23:58:36		1
23:59:02		1
23:59:24		1
23:59:54		1

Marks the end of the episode on each day across which all the mobile sensing variables are aggregated. In some case, when the daily diary was answered after midnight, this time point is on the following day from “ep_start”.

ep_dur – Duration of Episode

960.1		3
960.116666666667		1
960.133333333333		1
960.2		1
960.266666666667		2
960.283333333333		3
960.3		4
...	(3626 rows omitted)	4546
1397.26666666667		1
1405.6		1
1409.76666666667		1
1411.13333333333		1
1413.53333333333		1
1414.46666666667		1
1418.45		1

Time between “ep_start” and “ep_end” given in minutes. This is the length of time across which all mobile sensing variables were aggregated on that day.

3 Daily Diary

mood_awake – Mood: Awake

0	[0] Response -3	171
1	[1] Response -2	305
2	[2] Response -1	537
3	[3] Response 0	415
4	[4] Response 1	997
5	[5] Response 2	1419
6	[6] Response 3	724
-1	[-1] No answer	0

Today I felt: tired - awake

Wilhelm, P., & Schoebi, D. (2007). Assessing mood in daily life: Structural validity, sensitivity to change, and reliability of a short-scale to measure three basic dimensions of mood. European Journal of Psychological Assessment, 23(4), 258–267. https://doi.org/10.1027/1015-5759.23.4.258

mood_content – Mood: Content

0	[0] Response -3	88
1	[1] Response -2	158
2	[2] Response -1	351
3	[3] Response 0	567
4	[4] Response 1	1019
5	[5] Response 2	1504
6	[6] Response 3	881
-1	[-1] No answer	0

Today I felt: discontent - content

mood_calm – Mood: Calm

0	[0] Response -3	90
1	[1] Response -2	174
2	[2] Response -1	400
3	[3] Response 0	656
4	[4] Response 1	998
5	[5] Response 2	1379
6	[6] Response 3	870
-1	[-1] No answer	1

Today I felt: agitated - calm

mood_energetic – Mood: Full of Energy

0	[0] Response -3	149
1	[1] Response -2	270
2	[2] Response -1	522
3	[3] Response 0	741

4	[4] Response 1	1345
5	[5] Response 2	1109
6	[6] Response 3	424
-1	[-1] No answer	8

Today I felt: without energy - full of energy

mood_well – Mood: Well

0	[0] Response -3	113
1	[1] Response -2	211
2	[2] Response -1	409
3	[3] Response 0	600
4	[4] Response 1	1035
5	[5] Response 2	1380
6	[6] Response 3	812
-1	[-1] No answer	8

Today I felt: unwell - well

mood_relaxed – Mood: Relaxed

0	[0] Response -3	113
1	[1] Response -2	232
2	[2] Response -1	561
3	[3] Response 0	728
4	[4] Response 1	1047
5	[5] Response 2	1167
6	[6] Response 3	712
-1	[-1] No answer	8

Today I felt: tense - relaxed

frie_dur_sub – Friends: Duration Rating

1	[1] 1 = very little	318
2	[2] 2	421
3	[3] 3	366
4	[4] 4	323
5	[5] 5	341
6	[6] 6	201
7	[7] 7 = very much	203
-2	[-2] Does not apply	2395

Now it's about your friends: How much personal contact did you have today?

Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „very little“ and „very much“; Alternative response: „Did not have contact with friends“ leads directly to next question on colleagues.

frie_dur_obj – Friends: Duration in Hours

5	[5] 0h:05min	238
15	[15] 0h:15min	230
30	[30] 0h:30min	292
60	[60] 1h:00min	245
90	[90] 1h:30min	148
120	[120] 2h:00min	176
150	[150] 2h:30min	109
...	(37 rows omitted)	719
1290	[1290] 21h:30min	0
1320	[1320] 22h:00min	0
1350	[1350] 22h:30min	0
1380	[1380] 23h:00min	0
1410	[1410] 23h:30min	2
1440	[1440] 24h:00min	13
-2	[-2] Does not apply	2396

Now it's about your friends: How long was your personal contact today?
The answer is given on a scroll wheel: „0h:05min“, „0h:15min“, „0h:30min“, „1h:00min“, „1h:30min“, ... (in 30min increments until...), „24h:00min“.

frie_val – Friends: Valence

1	[1] 1 = unpleasant	2
2	[2] 2	5
3	[3] 3	35
4	[4] 4	124
5	[5] 5	364
6	[6] 6	753
7	[7] 7 = pleasant	885
-2	[-2] Does not apply	2400

Now it's about your friends: How was the contact?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „unpleasant“ and „pleasant“.

coll_dur_sub – Colleagues: Duration Rating

1	[1] 1 = very little	141
2	[2] 2	153
3	[3] 3	157
4	[4] 4	252

5	[5] 5	286
6	[6] 6	283
7	[7] 7 = very much	309
-2	[-2] Does not apply	2987

Now it's about your colleagues: How much personal contact did you have today?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „very little" and „very much"; Alternative response: „Did not have contact with colleagues" leads directly to next question on partner.

coll_dur_obj – Colleagues: Duration in Hours

5	[5] 0h:05min	132
15	[15] 0h:15min	93
30	[30] 0h:30min	109
60	[60] 1h:00min	103
90	[90] 1h:30min	90
120	[120] 2h:00min	88
150	[150] 2h:30min	39
...	(37 rows omitted)	921
1290	[1290] 21h:30min	0
1320	[1320] 22h:00min	0
1350	[1350] 22h:30min	0
1380	[1380] 23h:00min	0
1410	[1410] 23h:30min	1
1440	[1440] 24h:00min	2
-2	[-2] Does not apply	2990

Now it's about your colleagues: How long was your personal contact today?
The answer is given on a scroll wheel: „0h:05min", „0h:15min", „0h:30min", „1h:00min", „1h:30min", ... (in 30min increments until...), „24h:00min".

coll_val – Colleagues: Valence

1	[1] 1 = unpleasant	12
2	[2] 2	15
3	[3] 3	55
4	[4] 4	178
5	[5] 5	419
6	[6] 6	546
7	[7] 7 = pleasant	343
-2	[-2] Does not apply	3000

Now it's about your colleagues: How was the contact?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „unpleasant" and „pleasant".

part_dur_sub – Partner: Duration Rating

1	[1] 1 = very little	160
2	[2] 2	213
3	[3] 3	354
4	[4] 4	485
5	[5] 5	679
6	[6] 6	575
7	[7] 7 = very much	956
-2	[-2] Does not apply	1146

Now it's about your partner: How much personal contact did you have today?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „very little" and „very much"; Alternative response: „Did not have contact with my partner" leads directly to next question on children.

part_dur_obj – Partner: Duration in Hours

5	[5] 0h:05min	46
15	[15] 0h:15min	61
30	[30] 0h:30min	102
60	[60] 1h:00min	151
90	[90] 1h:30min	127
120	[120] 2h:00min	168
150	[150] 2h:30min	122
...	(37 rows omitted)	2300
1290	[1290] 21h:30min	12
1320	[1320] 22h:00min	37
1350	[1350] 22h:30min	14
1380	[1380] 23h:00min	17
1410	[1410] 23h:30min	7
1440	[1440] 24h:00min	257
-2	[-2] Does not apply	1147

Now it's about your partner: How long was your personal contact today?
Answer is given on a scroll wheel: „0h:05min", „0h:15min", „0h:30min", „1h:00min", „1h:30min", ... (in 30min increments until...), „24h:00min".

part_val – Partner: Valence

1	[1] 1 = unpleasant	15
2	[2] 2	36
3	[3] 3	86
4	[4] 4	244
5	[5] 5	540
6	[6] 6	1011
7	[7] 7 = pleasant	1482

-2	[-2] Does not apply	1154

Now it's about your partner: How was the contact?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „unpleasant" and „pleasant".

kids_dur_sub – Own Children: Duration Rating

1	[1] 1 = very little	161
2	[2] 2	246
3	[3] 3	285
4	[4] 4	350
5	[5] 5	398
6	[6] 6	336
7	[7] 7 = very much	368
-2	[-2] Does not apply	2424

Now it's about your children: How much personal contact did you have today?
Answers are given on a Likert-scale from 1 to 7, with anchors „very little" and „very much";
Alternative response: „Did not have contact with my children" leads directly to next question on other family members.

kids_dur_obj – Own Children: Duration in Hours

5	[5] 0h:05min	93
15	[15] 0h:15min	95
30	[30] 0h:30min	152
60	[60] 1h:00min	181
90	[90] 1h:30min	131
120	[120] 2h:00min	152
150	[150] 2h:30min	92
...	(37 rows omitted)	1122
1290	[1290] 21h:30min	6
1320	[1320] 22h:00min	10
1350	[1350] 22h:30min	5
1380	[1380] 23h:00min	7
1410	[1410] 23h:30min	4
1440	[1440] 24h:00min	93
-2	[-2] Does not apply	2425

Now it's about your children: How long was your personal contact today?
The answer is given on a scroll wheel: „0h:05min", „0h:15min", „0h:30min", „1h:00min", „1h:30min", ... (in 30min increments until...), „24h:00min".

kids_val – Own Children: Valence

1	[1] 1 = unpleasant	9
2	[2] 2	9
3	[3] 3	30
4	[4] 4	116
5	[5] 5	326
6	[6] 6	762
7	[7] 7 = pleasant	886
-2	[-2] Does not apply	2430

Now it's about your children: How was the contact?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „unpleasant" and „pleasant".

fami_dur_sub – Other Family Members: Duration Rating

1	[1] 1 = very little	277
2	[2] 2	322
3	[3] 3	303
4	[4] 4	250
5	[5] 5	254
6	[6] 6	138
7	[7] 7 = very much	167
-2	[-2] Does not apply	2857

Now it's about other family members: How much personal contact did you have today?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „very little" and „very much"; Alternative response: „Did not have contact with other family members" leads directly to next question on other people.

fami_dur_obj – Other Family Members: Duration in Hours

5	[5] 0h:05min	206
15	[15] 0h:15min	207
30	[30] 0h:30min	229
60	[60] 1h:00min	191
90	[90] 1h:30min	130
120	[120] 2h:00min	123
150	[150] 2h:30min	71
...	(37 rows omitted)	541
1290	[1290] 21h:30min	0
1320	[1320] 22h:00min	0
1350	[1350] 22h:30min	0
1380	[1380] 23h:00min	1
1410	[1410] 23h:30min	1
1440	[1440] 24h:00min	10
-2	[-2] Does not apply	2858

Now it's about other family members: How long was your personal contact today?
The answer is given on a scroll wheel: „0h:05min", „0h:15min", „0h:30min", „1h:00min", „1h:30min", ... (in 30min increments until...), „24h:00min".

fami_val – Other Family Members: Valence

1	[1] 1 = unpleasant	19
2	[2] 2	22
3	[3] 3	46
4	[4] 4	196
5	[5] 5	321
6	[6] 6	513
7	[7] 7 = pleasant	592
-2	[-2] Does not apply	2859

Now it's about other family members: How was the contact?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „unpleasant" and „pleasant".

othe_dur_sub – Other People: Duration Rating

1	[1] 1 = very little	534
2	[2] 2	574
3	[3] 3	515
4	[4] 4	398
5	[5] 5	297
6	[6] 6	187
7	[7] 7 = very much	176
-2	[-2] Does not apply	1887

Now it's about other persons: How much personal contact did you have today?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „very little" and „very much"; Alternative response: „Did not have contact with other persons" leads directly to question on desires.

othe_dur_obj – Other People: Duration in Hours

5	[5] 0h:05min	383
15	[15] 0h:15min	389
30	[30] 0h:30min	473
60	[60] 1h:00min	370
90	[90] 1h:30min	210
120	[120] 2h:00min	204
150	[150] 2h:30min	99
...	(37 rows omitted)	539
1290	[1290] 21h:30min	0
1320	[1320] 22h:00min	1

1350	[1350] 22h:30min	1
1380	[1380] 23h:00min	0
1410	[1410] 23h:30min	1
1440	[1440] 24h:00min	11
-2	[-2] Does not apply	1887

Now it's about other persons: How long was your personal contact today?
The answer is given on a scroll wheel: „0h:05min", „0h:15min", „0h:30min", „1h:00min", „1h:30min", ... (in 30min increments until...), „24h:00min".

othe_val – Other People: Valence

1	[1] 1 = unpleasant	23
2	[2] 2	39
3	[3] 3	98
4	[4] 4	516
5	[5] 5	693
6	[6] 6	765
7	[7] 7 = pleasant	544
-2	[-2] Does not apply	1890

Now it's about other persons: How was the contact?
Answers are given on a 7-point Likert-scale from 1 to 7, with anchors „unpleasant" and „pleasant".

desire_social – Desire For Social Contact

1	[1] 1 = does not apply	1237
2	[2] 2	822
3	[3] 3	616
4	[4] 4	757
5	[5] 5	534
6	[6] 6	286
7	[7] 7 = does apply	264
-1	[-1] No answer	52

I would rather have spent more time in the company of others today.
The answer is given on a 7-point Likert-scale from 1 to 7, with anchors „does not apply" and „does apply".

desire_alone – Desire To Be Alone

1	[1] 1 = does not apply	1155
2	[2] 2	831
3	[3] 3	631
4	[4] 4	766

5	[5] 5	572
6	[6] 6	309
7	[7] 7 = does apply	252
-1	[-1] No answer	52

I would rather have spent more time alone today.
The answer is given on a 7-point Likert-scale from 1 to 7, with anchors „does not apply“ and „does apply“.

4 Calls

From the timestamped call logs, number and duration of incoming and outgoing calls per ESM episode were extracted. Duration of calls is cut off when exceeding over next hour of the day.

n_calls – Number of Calls

0		2237
1		752
2		501
3		305
4		228
5		142
6		102
...	(13 rows omitted)	290
20		2
21		2
25		3
26		1
28		1
34		1
39		1

dur_calls – Duration of Calls

0		2237
0.0166666666666667		5
0.0333333333333333		9
0.05		7
0.0666666666666667		4
0.0833333333333333		3
0.1		4
...	(1232 rows omitted)	2292
176.9		1
195.55		1
199.066666666667		1
222.033333333333		1

276.246133335431	1
293.35	1
299.433333333333	1

5 Texts

Smartphone sensing data is aggregated to track the number of text messages sent per ESM episode as well as the aggregated count of typed characters within these text messages. Only texts typed in various communication apps are taken into account. Texts typed into search or navigation bars within those apps have been excluded. SMS texts were also not considered because of low occurrence.

texts_outgoing_freq – Number of Texts Sent

0		1954
1		356
2		286
3		195
4		160
5		154
6		135
...	(72 rows omitted)	1321
101		1
105		1
108		1
130		1
134		1
138		1
167		1

texts_outgoing_length – Character Count of Texts Sent

0		1954
1		10
2		28
3		7
4		18
5		5
6		9
...	(1217 rows omitted)	2530
6802		1
8000		1
8072		1
8451		1
10791		1
16074		1
57511		1

6 App Usage

Smartphone sensing data is aggregated on a daily level to track participants' usage of different apps per ESM episode. This includes continuous tracking of the frequency of opening an app and the time period using each app. Smartphone sensing starts after setup of the PhoneStudy app and is active until the app is uninstalled. App usage duration times are given in minutes. For more details on the app categorization procedure, see Schoedel et al. (2022). This enabled us to categorize 93.58% of all app usage events and 31.33% of all apps ever used in the sample.

comm_app_freq – Communication Apps: Frequency

0		250
1		65
2		56
3		70
4		81
5		94
6		105
...	(165 rows omitted)	3833
230		1
232		1
247		1
251		1
261		1
365		1
-1		8

Schoedel, R., Oldemeier, M., Bonauer, L., & Sust, L. (2022). Systematic categorisation of 3,091 smartphone applications from a large-scale smartphone sensing dataset. Journal of Open Psychology Data, 10(1), 7. https://doi.org/10.5334/jopd.59

comm_app_time – Communication Apps: Duration

0		250
0.0000500003496805827		1
0.000166670481363932		1
0.00280000368754069		1
0.00291666984558105		1
0.00449999968210856		1
0.00631666580835978		1
...	(4298 rows omitted)	4298
371.228750002384		1
404.097516667843		1
411.662850006421		1
459.191483330727		1

735.648799991608	1
774.739966654778	1
-1	8

socmed_app_freq – Social Media Apps: Frequency

0	2305
1	135
2	171
3	159
4	123
5	117
6	94
... (93 rows omitted)	1450
158	1
160	1
167	1
182	1
215	1
305	1
-1	8

socmed_app_time – Social Media Apps: Duration

0	2305
0.0000166654586791992	2
0.0000333348910013835	3
0.0000499963760375977	1
0.0000500003496805827	2
0.0000666697820027669	1
0.0000833312670389811	1
... (2237 rows omitted)	2239
198.257233333588	1
213.713399998347	1
304.324533347289	1
316.053983330727	1
398.121516680717	1
415.542999994755	1
-1	8

audio_app_freq – Audio Entertainment Apps: Frequency

0	3505
1	145
2	132

3		108
4		80
5		74
6		64
...	(41 rows omitted)	443
52		2
53		3
58		1
84		1
97		1
108		1
-1		8

audio_app_time – Audio Entertainment Apps: Duration

0		3505
0.0000166654586791992		2
0.0000166694323221842		1
0.0000333309173583984		2
0.0000333348910013835		3
0.0000333388646443685		1
0.0000500003496805827		2
...	(1035 rows omitted)	1038
54.5649333079656		1
55.1948666652044		1
61.035433336099		1
62.7204333265622		1
76.3735666553179		1
78.0823499997457		1
-1		8

career_app_freq – Career Apps: Frequency

0		4376
1		30
2		37
3		19
4		24
5		10
6		10
...	(18 rows omitted)	48
39		1
40		1
43		1
51		1
61		1
73		1

-1	8

career_app_time – Career Apps: Duration

0		4376
0.0000166654586791992		2
0.0000333309173583984		2
0.0000500003496805827		2
0.0000666658083597819		2
0.0000666697820027669		1
0.0000833352406819662		1
...	(168 rows omitted)	168
12.4984333316485		1
12.5545499960581		1
13.5223333279292		1
14.2569166739782		1
18.791750005881		1
19.4928166707357		1
-1		8

create_app_freq – Creativity Apps: Frequency

0		4525
1		12
2		1
3		3
4		2
5		1
6		1
...	(6 rows omitted)	7
15		1
16		2
21		1
22		1
25		2
30		1
-1		8

create_app_time – Creativity Apps: Duration

0	4525
0.0000499963760375977	1
0.0222833355267843	1
0.0269000013669332	1
0.0307500084241231	1

0.0390833338101705		1
0.0774499972661336		1
...	(23 rows omitted)	23
26.7029166658719		1
27.6563666701317		1
28.6013333280881		1
30.3207166790962		1
31.8052666664124		1
33.5546999971072		1
-1		8

dating_app_freq – Dating Apps: Frequency

0		4439
1		12
2		17
3		18
4		10
5		12
6		6
...	(18 rows omitted)	40
37		1
51		1
94		1
108		1
156		1
223		1
-1		8

dating_app_time – Dating Apps: Duration

0		4439
0.0000333309173583984		1
0.000150001049041748		1
0.0507333318392436		1
0.0667999982833862		1
0.0673166632652283		1
0.0706000049908956		1
...	(109 rows omitted)	109
35.6137333273888		1
36.9919166405996		1
39.5341833511988		1
55.5099999745687		1
70.5789166529973		1
74.8487999916077		1
-1		8

finance_app_freq – Finance Apps: Frequency

0		3199
1		356
2		267
3		183
4		117
5		78
6		64
...	(23 rows omitted)	287
30		3
33		1
35		1
38		2
55		1
82		1
-1		8

finance_app_time – Finance Apps: Duration

0		3199
0.0000166694323221842		2
0.0000333309173583984		6
0.0000333348910013835		5
0.0000333388646443685		2
0.0000500003496805827		3
0.0000500043233235677		1
...	(1325 rows omitted)	1336
21.5635166724523		1
25.1818666617076		1
26.9965666691462		1
35.6340833425522		1
46.6902666648229		1
60.2309333403905		1
-1		8

food_app_freq – Food Apps: Frequency

0		4052
1		116
2		107
3		73
4		62
5		26
6		32
...	(11 rows omitted)	82
18		2

19	3
20	1
23	2
25	1
26	1
-1	8

food_app_time – Food Apps: Duration

0		4052
0.0000166654586791992		1
0.000016669432322184 2		1
0.0000333309173583984		1
0.0000333348910013835		2
0.0000500003496805827		2
0.0000666658083597819		2
...	(493 rows omitted)	493
18.8573166688283		1
19.1250833272934		1
19.3577999949455		1
26.3753000020981		1
31.1564000169436		1
36.5077166636785		1
-1		8

game_app_freq – Game Apps: Frequency

0		3646
1		118
2		98
3		84
4		76
5		59
6		50
...	(42 rows omitted)	423
69		1
76		1
99		1
106		1
111		1
113		1
-1		8

game_app_time – Game Apps: Duration

0		3646
0.0000166654586791992		3
0.0000333309173583984		2
0.0000333348910013835		1
0.0000500003496805827		3
0.0000666658083597819		2
0.0000666697820027669		1
...	(893 rows omitted)	896
81.6103666623433		1
81.6450999855995		1
95.9370833277702		1
100.878466669718		1
121.975066681703		1
146.40168333451		1
-1		8

health_app_freq – Health Apps: Frequency

0		3246
1		501
2		268
3		149
4		84
5		59
6		43
...	(19 rows omitted)	203
26		2
27		1
30		1
31		1
32		1
92		1
-1		8

health_app_time – Health Apps: Duration

0		3246
0.0000166654586791992		3
0.0000166694323221842		5
0.0000333309173583984		2
0.0000333348910013835		4
0.0000499963760375977		2
0.0000500003496805827		3
...	(1274 rows omitted)	1289
30.2965833306313		1
34.5345999836922		1
36.0041666785876		1

45.7527666648229	1
46.4399000048637	1
70.7910666704178	1
-1	8

internet_app_freq – Internet Apps: Frequency

0		904
1		288
2		365
3		318
4		286
5		246
6		228
...	(55 rows omitted)	1919
73		1
75		1
81		1
84		1
101		1
116		1
-1		8

internet_app_time – Internet Apps: Duration

0		904
0.0000166654586791992		1
0.0000333348910013835		2
0.0000500003496805827		1
0.0000500043233235677		1
0.0000666658083597819		1
0.000166666507720947		1
...	(3633 rows omitted)	3643
137.376750004292		1
152.277083341281		1
156.571666677793		1
171.095749998093		1
174.87731667757		1
178.952783326308		1
-1		8

know_app_freq – Knowledge Apps: Frequency

0	4224
1	105

2		83
3		37
4		24
5		14
6		10
...	(16 rows omitted)	57
26		1
29		1
31		1
36		1
41		1
42		1
-1		8

know_app_time – Knowledge Apps: Duration

0		4224
0.0000166654586791992		3
0.0000333309173583984		2
0.0000333348910013835		1
0.0000666618347167969		1
0.0000666697820027669		2
0.0000833352406819662		1
...	(319 rows omitted)	320
32.8409833312035		1
36.2676666577657		1
39.7967000047366		1
43.6977333386739		1
45.4700999975204		1
99.8549666722616		1
-1		8

news_app_freq – News Apps: Frequency

0		3379
1		221
2		168
3		138
4		122
5		92
6		70
...	(27 rows omitted)	364
35		1
36		1
37		1
42		1
43		1

60	1
-1	8

news_app_time – News Apps: Duration

	0	3379
0.0000166654586791992		14
0.0000166694323221842		5
0.0000333309173583984		8
0.0000333348910013835		6
0.0000333388646443685		2
0.0000499963760375977		1
...	(1126 rows omitted)	1139
47.6858000000318		1
48.1905333280563		1
51.003016658624		1
51.6587833325068		1
64.4265666683515		1
148.116933337847		1
-1		8

orientat_app_freq – Orientation Apps: Frequency

0		3393
1		296
2		302
3		131
4		104
5		62
6		53
...	(23 rows omitted)	212
33		1
35		1
36		1
41		2
92		1
130		1
-1		8

orientat_app_time – Orientation Apps: Duration

0	3393
0.0000166654586791992	6
0.0000166694323221842	4
0.0000333309173583984	3

0.0000333348910013835		2
0.000033338864643685		1
0.0000500003496805827		5
...	(1132 rows omitted)	1140
92.4047833363215		1
107.329483338197		1
117.148166668415		1
120.097516659896		1
138.244533336163		1
152.243083337943		1
-1		8

photo_app_freq – Photography Apps: Frequency

0		2056
1		434
2		365
3		256
4		234
5		168
6		137
...	(55 rows omitted)	901
73		1
74		3
84		1
85		2
87		1
98		1
-1		8

photo_app_time – Photography Apps: Duration

0		2056
0.0000166654586791992		4
0.000016669432321842		1
0.0000333309173583984		2
0.0000333348910013835		1
0.0000499963760375977		3
0.0000500003496805827		1
...	(2450 rows omitted)	2486
43.48934999307		1
47.2265166521072		1
48.1514166355133		1
52.6093499938647		1
67.3680666764577		1
86.2314500053724		1
-1		8

read_app_freq – Reading Apps: Frequency

0	4505
1	10
2	12
3	5
4	6
5	5
6	5
9	3
11	2
12	3
14	1
18	1
23	1
37	1
-1	8

read_app_time – Reading Apps: Duration

0		4505
0.0000166654586791992		1
0.000983333587646484		1
0.00105000336964925		1
0.0027999997138977		1
0.0273333350817362		1
0.0339833339055379		1
...	(42 rows omitted)	43
10.0002500017484		1
10.3470500151316		1
10.6420499920845		1
11.6053166627884		1
20.8560000022252		1
31.5631500005722		1
-1		8

security_app_freq – Security Apps: Frequency

0	3721
1	372
2	159
3	70
4	35
5	19

6		21
...	(40 rows omitted)	157
68		1
71		1
72		1
80		1
83		1
85		1
-1		8

security_app_time – Security Apps: Duration

0		3721
0.0000166654586791992		4
0.0000166694323221842		1
0.0000333309173583984		1
0.0000333348910013835		2
0.0000499963760375977		1
0.0000500043233235677		2
...	(787 rows omitted)	822
97.9301500002543		1
104.039150003592		1
107.26688332955		1
110.018850000699		1
110.036316668987		1
186.183216667175		1
-1		8

settings_app_freq – Settings Apps: Frequency

0		2669
1		733
2		394
3		237
4		156
5		100
6		68
...	(20 rows omitted)	196
29		1
32		2
35		1
39		1
42		1
48		1
-1		8

settings_app_time – Settings Apps: Duration

0		2669
0.0000333309173583984		1
0.000033334891001383 5		1
0.0000500043233235677		1
0.0000666658083597819		1
0.0000666697820027669		1
0.0000833312670389811		2
...	(1852 rows omitted)	1878
47.8377333362897		1
50.5912833213806		1
102.507283318043		1
120.619166668256		1
121.95081666708		1
130.76355000337		1
-1		8

shop_app_freq – Shopping Apps: Frequency

0		3176
1		214
2		247
3		178
4		112
5		96
6		87
...	(36 rows omitted)	444
45		1
47		1
50		1
64		1
86		1
97		1
-1		8

shop_app_time – Shopping Apps: Duration

0		3176
0.0000166654586791992		7
0.0000166694323221842		5
0.0000499963760375977		1
0.0000500003496805827		2
0.0000666658083597819		2
0.0000833312670389811		1
...	(1353 rows omitted)	1360
65.7576999982198		1

71.0690833210945	1
71.1914333343506	1
94.9317666927973	1
149.207583336035	1
158.887733340263	1
-1	8

spirit_app_freq – Spirituality Apps: Frequency

0	4533
1	16
3	3
4	5
5	2
9	1
-1	8

spirit_app_time – Spirituality Apps: Duration

0		4533
0.0721666653951009		1
0.0850333372751872		1
0.0904833316802978		1
0.0924166679382324		1
0.102050002415975		1
0.116249998410543		1
...	(15 rows omitted)	15
3.9252166668574		1
4.74623333215714		1
4.86641666889191		1
5.81796666781108		1
6.5405166665713		1
6.71839999755224		1
-1		8

time_app_freq – Time Apps: Frequency

0		2210
1		548
2		475
3		303
4		236
5		195
6		114
...	(22 rows omitted)	468

30	2
31	3
32	1
33	2
37	2
49	1
-1	8

time_app_time – Time Apps: Duration

0		2210
0.0000166694323221842		1
0.0000333348910013835		1
0.00021666685740153		1
0.000266663233439128		1
0.000333333015441895		1
0.000366663932800293		1
...	(2258 rows omitted)	2338
34.4031166831652		1
41.2050999999046		1
60.9872833331426		1
68.6739000161489		1
84.9529666662216		1
201.914199995995		1
-1		8

tools_app_freq – Tools Apps: Frequency

0		1875
1		574
2		381
3		274
4		231
5		165
6		139
...	(45 rows omitted)	915
70		1
71		1
75		1
87		1
88		1
99		1
-1		8

tools_app_time – Tools Apps: Duration

0		1875
0.0000166654586791992		5
0.0000166694323221842		1
0.0000333309173583984		2
0.0000333348910013835		4
0.0000333388646443685		1
0.0000499963760375977		4
...	(2613 rows omitted)	2662
73.8378166675568		1
113.573449993134		1
121.27449999253		1
169.221933333079		1
176.658183340232		1
206.57303331693		1
-1		8

transport_app_freq – Transport Apps: Frequency

0		4190
1		82
2		78
3		43
4		27
5		31
6		23
...	(21 rows omitted)	77
32		1
33		1
37		1
38		3
41		1
43		2
-1		8

transport_app_time – Transport Apps: Duration

0		4190
0.0000166654586791992		3
0.0000333348910013835		2
0.000199989477793376		1
0.000200001398722331		1
0.000266663233439128		1
0.000466668605804443		1
...	(354 rows omitted)	355
18.0043333212535		1
19.2940499941508		1
24.5217833598455		1

25.0507333397865	1
26.7592999855677	1
28.421150024732	1
-1	8

visual_app_freq – Visual Entertainment Apps: Frequency

0		3239
1		254
2		277
3		190
4		117
5		96
6		46
...	(29 rows omitted)	335
40		1
43		1
46		1
49		1
68		1
103		1
-1		8

visual_app_time – Visual Entertainment Apps: Duration

0		3239
0.0000166654586791992		9
0.0000166694323221842		5
0.0000333309173583984		4
0.0000333348910013835		4
0.0000333388646443685		1
0.0000499963760375977		2
...	(1276 rows omitted)	1290
178.665183333556		1
206.851783335209		1
209.380133342743		1
230.172433336576		1
257.961700014273		1
311.215149990718		1
-1		8

weather_app_freq – Weather Apps: Frequency

0	3699
1	364

2		208
3		92
4		59
5		39
6		33
...	(8 rows omitted)	57
16		3
17		2
18		1
19		1
23		1
28		1
-1		8

weather_app_time – Weather Apps: Duration

0		3699
0.0000166694323221842		1
0.0000333348910013835		1
0.0000499963760375977		1
0.0000500043233235677		1
0.0000833312670389811		1
0.0000833352406819662		2
...	(840 rows omitted)	848
10.4860500017802		1
10.8547166546186		1
13.1514999985695		1
19.8340833385785		1
21.1301166653633		1
49.0893500010173		1
-1		8

Schoedel, R., Oldemeier, M., Bonauer, L., & Sust, L. (2022). Systematic categorisation of 3,091 smartphone applications from a large-scale smartphone sensing dataset. Journal of Open Psychology Data, 10(1), 7.
https://doi.org/10.5334/jopd.59

7 Conversation Detection

Using the AWARE Conversation plugin from Ferreira & Mulukutla (2020), ambient audio signal around the smartphone was sampled following a cycle of one-minute sampling and three-minutes break. A privacy-protective algorithm inferred whether conversation prevailed in ambient sound around the device (binary classification “noise/”voice” where “voice” indicates conversation). This information is used to compute the proportion of detected conversation samplings per ESM episode. In practice, the software sampled at lower rates on several devices, most likely because the operating system aborted the background process to conserve battery life. For more considerations on validity and reliability and comparison with self-report measures of in-person contact, see Roos et al. (2023).

n_aware – AWARE Conversations: Samplings

0		1550
1		41
2		16
3		7
4		5
5		3
6		4
...	(469 rows omitted)	2935
628		1
633		1
647		1
676		1
686		1
725		1
896		1

Ferreira, D., & Mulukutla, R. (2020). AWARE Plugin: Conversations. Retrieved from https://github.com/denzilferreira/com.aware.plugin.studentlife.audio_final
Roos, Y., Krämer, M. D., Richter, D., Schoedel, R., & Wrzus, C. (2023). Does Your Smartphone "Know" Your Social Life? A Methodological Comparison of Day Reconstruction, Experience Sampling, and Mobile Sensing. Advances in Methods and Practices in Psychological Science, 6(3), 1–12. https://doi.org/10.1177/25152459231178738

n_voice – AWARE Conversations: Conv. Detected

0		2115
1		209
2		134
3		87
4		86
5		87
6		60
...	(220 rows omitted)	1783
383		1
398		1
399		1
435		1
446		1
453		1
685		1

prop_voice – Proportion of Conversations

0		2115
0.00409836065573771		1
0.00416666666666667		1
0.00458715596330275		1
0.00460829493087558		1
0.00478468899521531		1
0.00485436893203883		1
...	(1855 rows omitted)	2440
0.733333333333333		1
0.737037037037037		1
0.75		1
0.75531914893617		1
0.764508928571429		1
0.767195767195767		1
0.775303643724696		1

This variable is computed by dividing n_voice by n_aware.

8 Device Status

From timestamped logs, the number of startup, shutdown and restart events of participant's smartphones per ESM episode were extracted. "Booting" events take startup and restart events into account.

shutdown – Number of Shutdown Events

0	4504
1	54
2	9
3	1

booted – Number of Booting Events

0	4007
1	505
2	46
3	9
5	1

9 Number Of Contact Entries

From contact entry smartphone logs, the number of unique contact entries was extracted.

unique_numbers – Number of Contacts

6		14
13		13
14		14
17		26
24		39
25		32
28		12
...	(225 rows omitted)	4276
826		12
933		8
1022		12
1217		5
1560		9
2951		12
-1		84