Supplement

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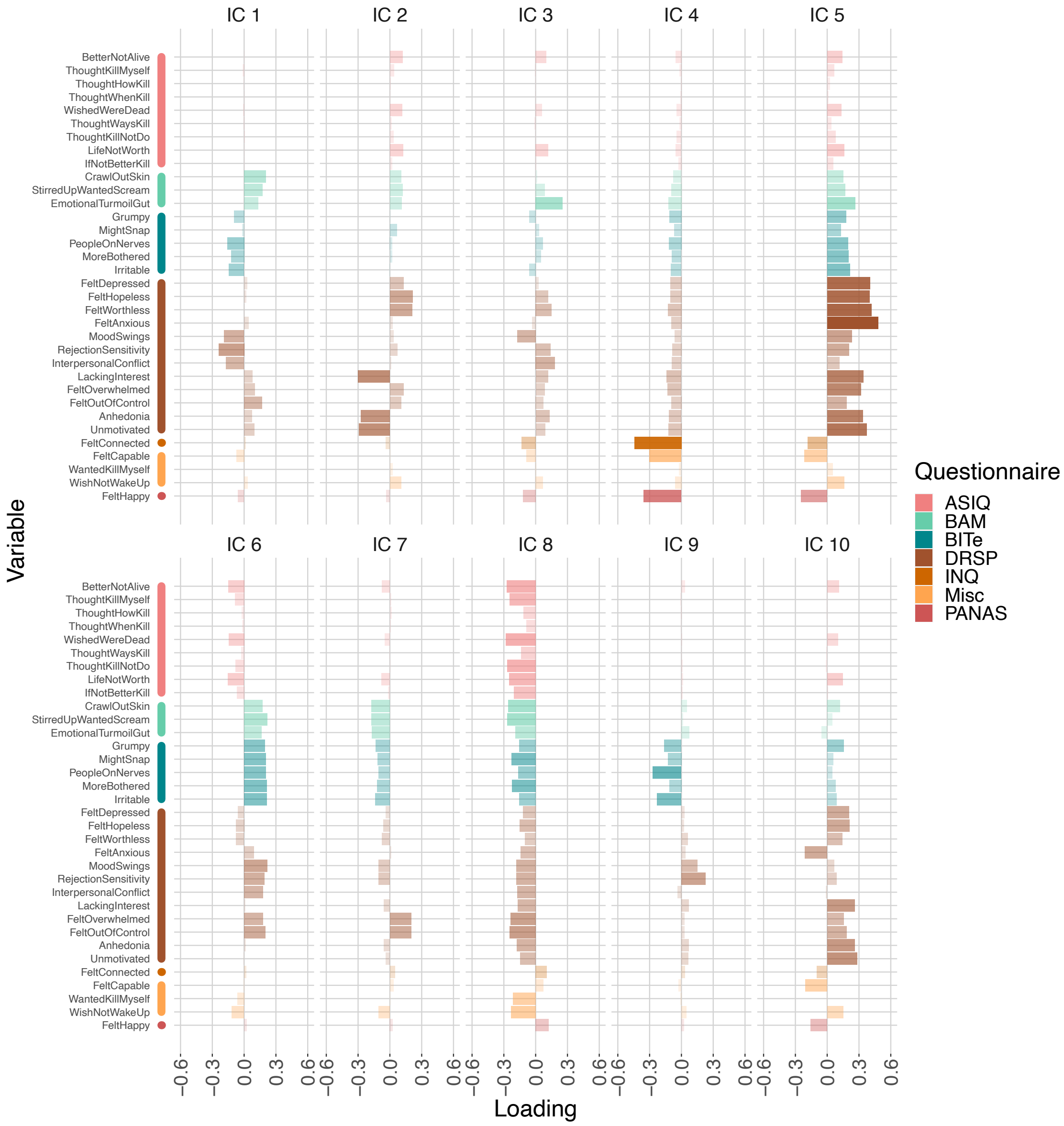
Self-report items

Shorthand	Question	Questionnaire
BetterNotAlive	I thought it would be better if I was not alive.	Adult Suicidal Ideation Questionnaire
ThoughtKillMyself	I thought about killing myself.	Adult Suicidal Ideation Questionnaire
ThoughtHowKill	I thought about how I might kill myself.	Adult Suicidal Ideation Questionnaire
ThoughtWhenKill	I thought about when I might kill myself.	Adult Suicidal Ideation Questionnaire
WishedWereDead	I wished I were dead.	Adult Suicidal Ideation Questionnaire
ThoughtWaysKill	I thought about ways people kill themselves.	Adult Suicidal Ideation Questionnaire
ThoughtKillNotDo	I thought about killing myself, but would not do it.	Adult Suicidal Ideation Questionnaire
LifeNotWorth	I thought that life was not worth living.	Adult Suicidal Ideation Questionnaire
IfNotBetterKill	I thought that if things would not get better I would kill myself.	Adult Suicidal Ideation Questionnaire
CrawlOutSkin	I wanted to crawl out of my skin.	Brief Agitation Measure
StirredUpWantedScream	I felt so stirred up inside I wanted to scream.	Brief Agitation Measure
EmotionalTurmoilGut	I felt a lot of emotional turmoil in my gut.	Brief Agitation Measure
Grumpy	I was grumpy.	Brief Irritability Test
MightSnap	I felt like I might snap.	Brief Irritability Test
PeopleOnNerves	Other people got on my nerves.	Brief Irritability Test
MoreBothered	Things bothered me more than they normally do.	Brief Irritability Test
Irritable	I felt irritable.	Brief Irritability Test
FeltDepressed	Felt depressed, down, or blue.	Daily Record of Severity of Problems - Expanded
FeltHopeless	Felt hopeless.	Daily Record of Severity of Problems - Expanded
FeltWorthless	Felt worthless or guilty.	Daily Record of Severity of Problems - Expanded
FeltAnxious	Felt anxious, keyed up, or on edge.	Daily Record of Severity of Problems - Expanded
MoodSwings	Had mood swings.	Daily Record of Severity of Problems - Expanded
RejectionSensitivity	Was more sensitive to rejection or my feelings were easily hurt.	Daily Record of Severity of Problems - Expanded
InterpersonalConflict	Had conflicts or problems with people.	Daily Record of Severity of Problems - Expanded
LackingInterest	Had less interest in my usual activities (e.g., work, school, friends, hobbies).	Daily Record of Severity of Problems - Expanded
FeltOverwhelmed	Felt overwhelmed, that I couldn't cope.	Daily Record of Severity of Problems - Expanded
FeltOutOfControl	Felt out of control.	Daily Record of Severity of Problems - Expanded
Anhedonia	Did not enjoy my usual activities.	Daily Record of Severity of Problems - Expanded
Unmotivated	Felt unmotivated to do my usual activities (e.g., work, school, friends, hobbies).	Daily Record of Severity of Problems - Expanded
FeltConnected	I felt close and connected with other people who are important to me.	Interpersonal Needs Questionnaire
FeltCapable	I felt capable in my daily tasks.	Item from prior EMA study (Misc)
WantedKillMyself	I wanted to kill myself.	Item from prior EMA study (Misc)
WishNotWakeUp	I wished I could go to sleep and never wake up.	Item from prior EMA study (Misc)
FeltHappy	I felt happy.	Positive and Negative Affect Schedule

Supplementary Table 1: Self-report item question content.

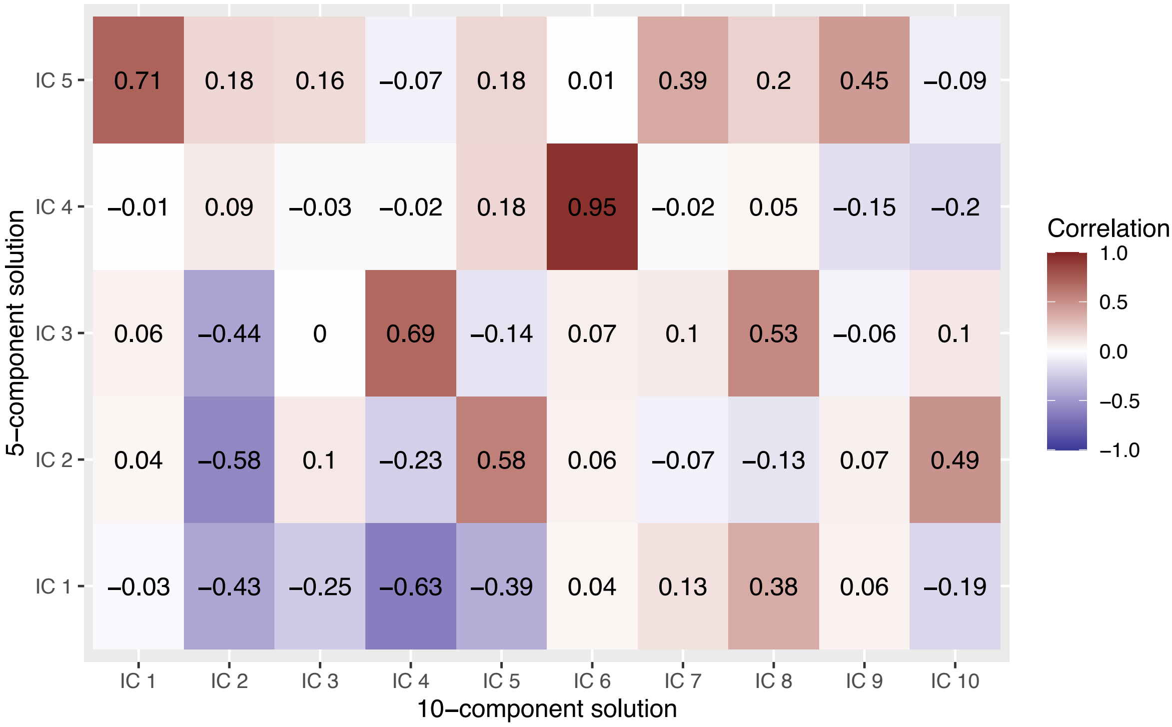
Model order analysis

In the main text, we discussed the most parsimonious 5-component solution. Different ICA model orders might be just as valid, however. To examine the behaviour of the independent components across multiple model orders, we reran our analyses with ten and twenty components and correlated the independent components of those solutions with the independent components of the 5-component solution.



Supplementary Figure 1: Mixing matrix of the 10-component ICA solution. *IC = independent component. For the questionnaire abbreviations, please refer to Supplementary Table 1.*

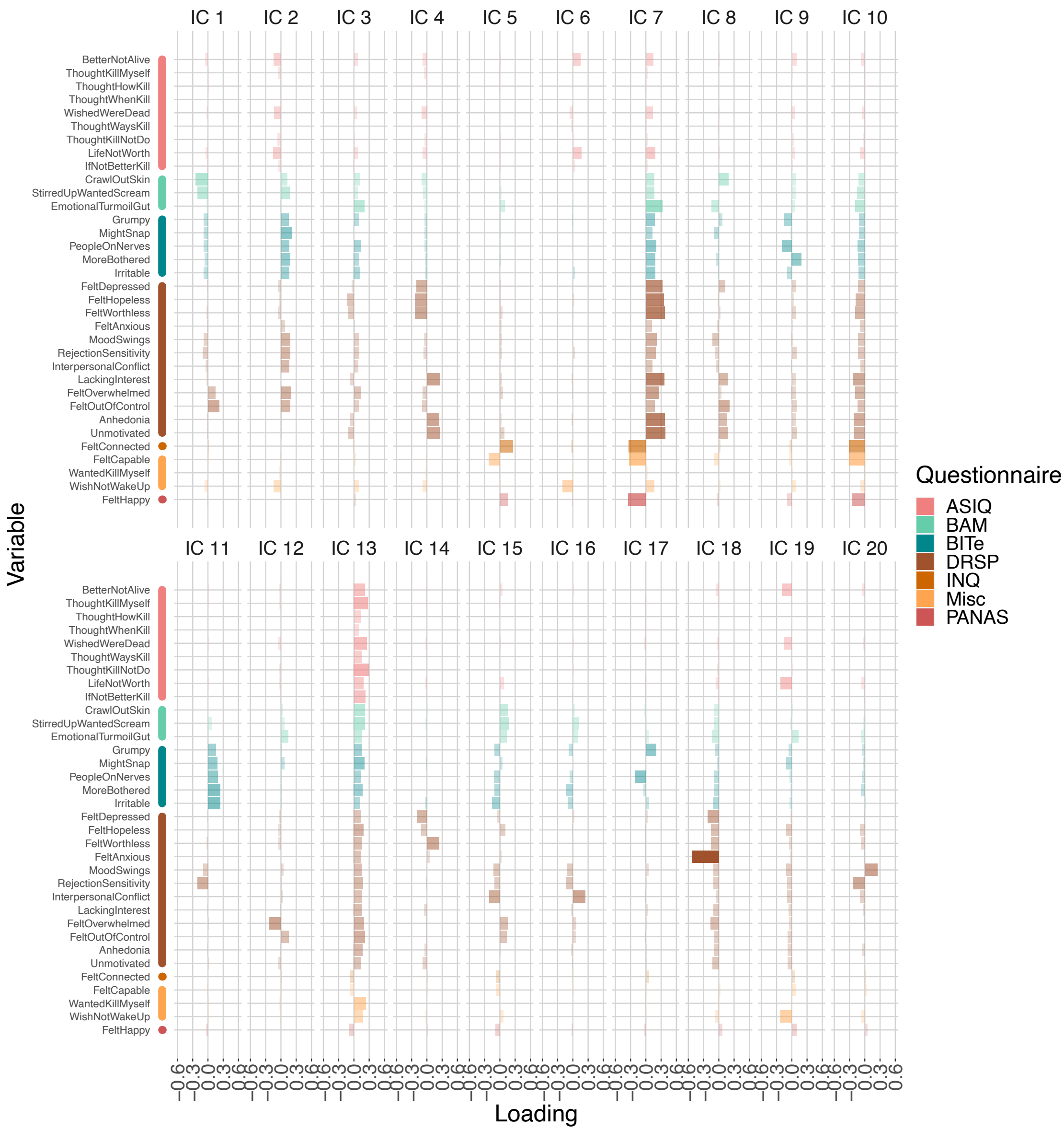
Ten components: The mixing matrix of a 10-component ICA solution is given in Supplementary Figure 1 and the cross-correlations between the independent components of this solution and the original 5-component solution are given in Supplementary Figure 2. To facilitate the comparison between the ICs of these solutions, here we will refer to the components by the prefix IC_X, where the subscript X indicates the model order (e.g., IC_5 for an IC of the 5-component solution). IC_5 1 correlates most strongly with IC_{10} 4, which is expected given the large loadings on the well-being variables in their respective mixing matrices. (Note that the sign of the correlations does not matter, as the independent components themselves are only defined up to a multiplicative sign.[1]) IC_5 2, on the other hand, shows strongest correlations with both IC_{10} 2 and IC_{10} 5. The correlation with IC_{10} 2 can be explained by its large loadings on the anhedonia items, and the correlation with IC_{10} 5 can be explained by a comparable loading polarity pattern (i.e., negative loadings on positive variables, positive loadings on negative variables, and relatively large loadings on the DRSP variables). IC_5 3 shows the strongest correlation with IC_{10} 4, but also a moderate correlation with IC_{10} 8. We see the same pattern as with IC_5 2: IC_{10} 8 has loadings for which the size



Supplementary Figure 2: Cross-correlations between the independent component time series of the 5- and 10-component solutions. *IC = independent component.*

corresponds to the loadings of IC_5 3, while IC_{10} 4 displays a loading polarity pattern similar to that of IC_5 3. It is not unlikely that IC_5 3 has split up into these two IC_{10} components. IC_5 4 shows a strong correlation with IC_{10} 6, which is not surprising given their similar loading values. IC_5 5, finally, shows its strongest correlation with IC_{10} 1. Their loadings are somewhat comparable, with positive loadings on the agitation items (BAM), negative loadings on the irritability items (BITe), and mixed loadings on the DRSP items.

As for the mixed-effects models of the 10-component solution, none of the effects survived Bonferroni correction (see Supplementary Table 2). We point out, however, that the nominally significant, negative effect of phone movement on IC_{10} 5 is consistent with what we found for the anhedonia component of the 5-component solution. All models except the one for IC_{10} 8 showed no signs of heteroskedasticity. Most models, except those for IC_{10} 5 and 10, showed slight departures from normal residuals. Participant-level random effects of the models for IC_{10} 1 and 6-10 displayed small to medium deviations from normality. Week-within-participant-level random effects showed small deviations from normality for all models except for the one for IC_{10} 10.

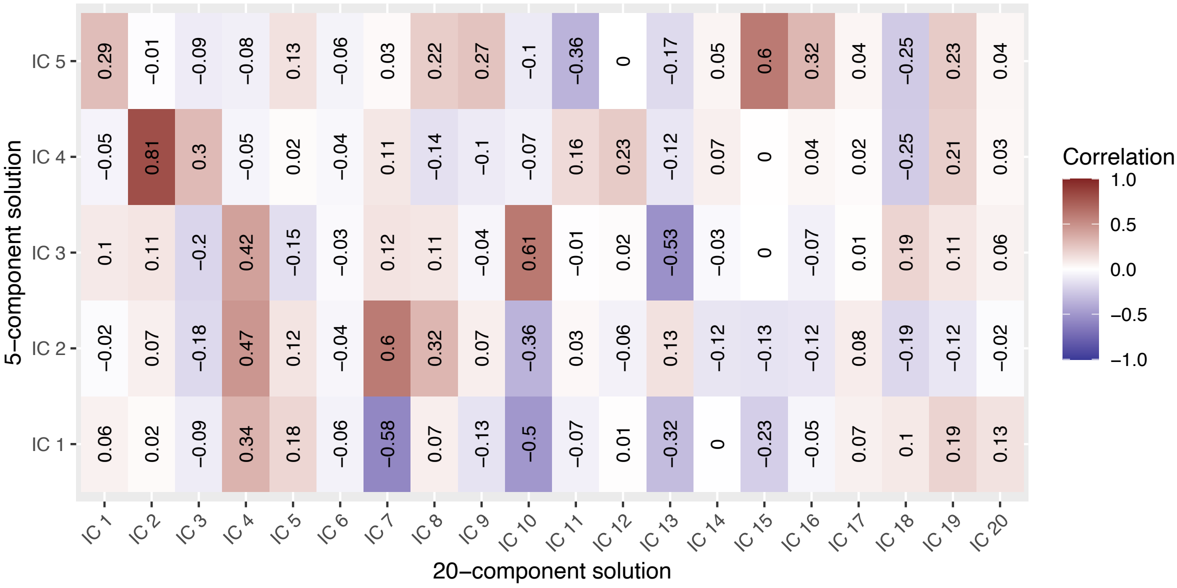


Supplementary Figure 3: Mixing matrix of the 20-component solution. *IC = independent component. For the questionnaire abbreviations, please refer to Supplementary Table 1.*

Twenty components: The mixing matrix of the 20-component ICA solution is given in Supplementary Figure 3 and the cross-correlations between its components and the components of the 5-component solution are given in Supplementary Figure 4. IC_5 1 and IC_5 2 correlate most strongly with IC_{20} 7. The 20-component mixing matrix shows that IC_{20} 7 has relatively strong loadings on both the well-being and anhedonia items, suggesting that it is a recombination of IC_5 1 and IC_5 2. Our phone movement sensitivity analysis (described below) shows results consistent with this suggestion. IC_5 3 shows its strongest correlations with IC_{20} 10 (similar loading pattern) and IC_{20} 13 (similar loading magnitude), which is the same behaviour we found for the 10-component solution. IC_5 4 has a strong correlation with IC_{20} 2, which is (again) unsurprising because they display very similar loadings. IC_5 5 displays its strongest correlation for IC_{20} 15: Both components again show positive agitation loadings, (mostly) negative irritability loadings, and mixed DRSP loadings.

Consistent with what we found in our sensitivity analysis, the mixed-effects model of the general affect component of the 20-component solution (IC_{20} 7) shows a significant association with phone movement after Bonferroni correction ($\beta = -0.14$, $p = 0.00011$). The sign of this effect is also consistent with the effect of phone movement on the anhedonia component in the 5-component solution (IC_5 2): More movement predicts lower ratings on LackingInterest, Anhedonia, and Unmotivated.

Only the model of IC_{20} 13 showed signs of heteroskedasticity, but several other models (IC_{20} 1, 6, 18, and 20) displayed structure in their residuals versus fitted-values plots. All models except the ones for IC_{20} 3, 7, and 18 showed small to medium deviations from residual normality. Participant-level random effects deviated moderately from normality for all models except the ones for IC_{20} 9, 10, 11, and 18. Week-within-participant-level random effects deviated slightly from normality for all models except the ones for IC_{20} 7, 18, and 20.



Supplementary Figure 4: Cross-correlations between the independent component time series of the 5- and 20-component solution. *IC = independent component.*

	IC 1			IC 2			IC 3			IC 4			IC 5			IC 6		
	β	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**
Median IKD	0.0051	0.91	1	-0.11	0.0091	0.73	-0.10	0.029	1	0.012	0.74	1	0.070	0.076	1	-0.088	0.040	1
95th percentile IKD	-0.043	0.25	1	0.046	0.20	1	-0.00049	0.99	1	-0.0049	0.87	1	-0.0067	0.84	1	0.053	0.14	1
MAD IKD	-0.00060	0.99	1	0.018	0.61	1	0.11	0.0076	0.61	0.011	0.72	1	-0.056	0.092	1	0.066	0.065	1
Autocorrect rate	0.0075	0.81	1	-0.0095	0.76	1	0.0090	0.79	1	-0.033	0.20	1	-0.0094	0.74	1	0.018	0.56	1
Backspace rate	0.018	0.53	1	-0.038	0.16	1	0.034	0.26	1	0.011	0.62	1	0.031	0.23	1	-0.012	0.66	1
Total number of key presses	-0.057	0.048	1	-0.0086	0.75	1	-0.056	0.060	1	-0.011	0.64	1	0.028	0.28	1	0.059	0.033	1
Movement rate	-0.043	0.15	1	0.045	0.12	1	-0.042	0.18	1	-0.018	0.47	1	-0.079	0.0027	0.21	0.044	0.13	1
Upright rate	0.0035	0.90	1	-0.062	0.027	1	-0.0042	0.89	1	-0.0062	0.79	1	0.013	0.63	1	0.0028	0.92	1

Supplementary Table 2: Model estimates for the 10-component ICA solution. *Every IC corresponds to a separate model. p' indicates uncorrected p values. IC = independent component; IKD = inter-key delay; MAD = mean absolute deviation. (Continues on next page.)*

IC 7			IC 8			IC 9			IC 10		
β	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**
0.061	0.16	1	-0.034	0.42	1	0.054	0.24	1	0.024	0.56	1
0.040	0.27	1	-0.0044	0.90	1	-0.029	0.46	1	0.0024	0.94	1
-0.037	0.30	1	0.054	0.13	1	-0.020	0.61	1	0.012	0.74	1
-0.025	0.43	1	-0.027	0.37	1	-0.018	0.57	1	-0.026	0.38	1
-0.0045	0.87	1	-0.0058	0.83	1	-0.013	0.66	1	-0.012	0.67	1
-0.018	0.52	1	-0.040	0.14	1	0.0038	0.90	1	-0.0076	0.78	1
0.046	0.11	1	0.041	0.15	1	-0.023	0.45	1	-0.084	0.0026	0.21
-0.085	0.0030	0.24	0.034	0.23	1	-0.0043	0.89	1	-0.061	0.028	1

Supplementary Table 2 (continued).

	IC 1			IC 2			IC 3			IC 4			IC 5			IC 6		
	β	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**
Median IKD	0.062	0.16	1	-0.074	0.10	1	-0.036	0.42	1	0.074	0.087	1	0.027	0.55	1	-0.077	0.096	1
95th percentile IKD	0.035	0.34	1	0.089	0.018	1	-0.047	0.21	1	-0.049	0.17	1	0.051	0.18	1	0.047	0.23	1
MAD IKD	-0.042	0.26	1	0.044	0.24	1	0.027	0.48	1	-0.0085	0.82	1	-0.043	0.26	1	0.021	0.59	1
Autocorrect rate	-0.062	0.052	1	0.031	0.33	1	-0.057	0.074	1	-0.0086	0.78	1	-0.029	0.36	1	-0.0069	0.83	1
Backspace rate	0.028	0.32	1	-0.033	0.25	1	0.049	0.085	1	0.059	0.034	1	-0.011	0.69	1	-0.045	0.13	1
Total number of key presses	-0.032	0.26	1	0.065	0.024	1	0.018	0.52	1	0.0023	0.93	1	0.011	0.70	1	0.058	0.051	1
Movement rate	0.015	0.62	1	0.040	0.18	1	0.064	0.032	1	-0.047	0.10	1	0.044	0.14	1	0.018	0.55	1
Upright rate	-0.075	0.011	1	-0.021	0.47	1	-0.0012	0.97	1	0.080	0.0046	0.74	-0.055	0.067	1	0.028	0.36	1

Supplementary Table 3: Model estimates for the 20-component ICA solution. *Every IC corresponds to a separate model. p' indicates uncorrected p values. IC = independent component; IKD = inter-key delay; MAD = mean absolute deviation. (Continues on next page.)*

IC 7			IC 8			IC 9			IC 10			IC 11			IC 12			IC 13		
β	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**
-0.017	0.67	1	0.13	0.0016	0.25	-0.054	0.25	1	0.050	0.19	1	-0.074	0.12	1	-0.0036	0.94	1	0.086	0.042	1
-0.018	0.59	1	-0.021	0.54	1	-0.046	0.25	1	0.012	0.72	1	-0.00016	1	1	0.046	0.23	1	0.023	0.51	1
0.044	0.20	1	-0.049	0.17	1	0.063	0.12	1	-0.024	0.45	1	0.037	0.37	1	0.0082	0.83	1	-0.095	0.0074	1
-0.025	0.40	1	0.018	0.56	1	0.032	0.32	1	-0.034	0.21	1	0.023	0.48	1	0.031	0.33	1	0.033	0.27	1
0.028	0.29	1	-0.019	0.49	1	0.0044	0.88	1	-0.0013	0.96	1	0.024	0.42	1	-0.0044	0.88	1	-0.013	0.63	1
0.0073	0.78	1	-0.011	0.68	1	-0.062	0.038	1	-0.0035	0.89	1	-0.028	0.36	1	0.012	0.69	1	0.048	0.080	1
-0.14	<0.0001	0.00011	0.012	0.66	1	-0.030	0.33	1	0.041	0.11	1	-0.0037	0.91	1	0.0074	0.81	1	-0.044	0.12	1
0.021	0.43	1	-0.046	0.098	1	-0.067	0.029	1	-0.045	0.076	1	-0.020	0.53	1	0.019	0.52	1	-0.039	0.16	1

Supplementary Table 3 (continued). *(Continues on next page.)*

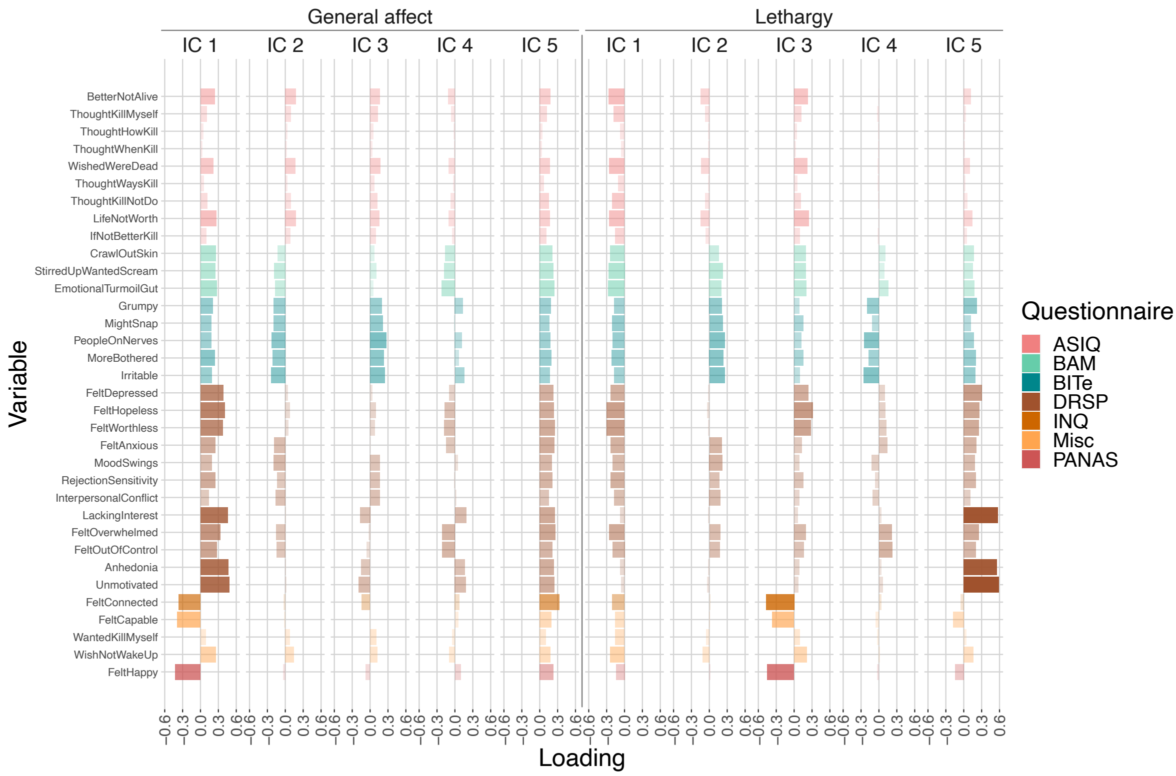
IC 14			IC 15			IC 16			IC 17			IC 18			IC 19			IC 20		
β	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**
0.035	0.46	1	-0.048	0.29	1	-0.099	0.043	1	0.11	0.019	1	-0.078	0.075	1	0.022	0.62	1	-0.014	0.78	1
-0.028	0.47	1	-0.00094	0.98	1	-0.029	0.49	1	-0.088	0.030	1	0.0013	0.97	1	-0.022	0.56	1	-0.022	0.59	1
-0.025	0.53	1	-0.015	0.69	1	0.11	0.0065	1	-0.062	0.13	1	0.077	0.037	1	0.012	0.75	1	-0.00034	0.99	1
0.0048	0.88	1	-0.041	0.20	1	0.054	0.11	1	-0.057	0.086	1	-0.0041	0.90	1	0.0077	0.81	1	0.0010	0.98	1
0.016	0.58	1	0.027	0.36	1	-0.025	0.41	1	0.019	0.51	1	-0.030	0.29	1	-0.0013	0.96	1	-0.035	0.25	1
-0.00091	0.98	1	-0.041	0.16	1	-0.016	0.60	1	0.028	0.36	1	-0.023	0.41	1	-0.0093	0.74	1	0.046	0.14	1
0.018	0.57	1	-0.044	0.15	1	-0.026	0.42	1	-0.036	0.25	1	-0.036	0.23	1	0.034	0.25	1	-0.041	0.20	1
0.084	0.0061	0.98	0.025	0.41	1	-0.023	0.46	1	-0.029	0.35	1	-0.015	0.61	1	0.0065	0.83	1	0.044	0.17	1

Supplementary Table 3 (continued).

Phone movement sensitivity analysis

Because the FastICA algorithm starts with a random estimate, its final solution differs from run to run.[1] We conducted a sensitivity analysis to estimate the impact of these differences on the effect of phone movement. More specifically, we ran the *fastICA* function 100 times on our data, manually examined all ICA solutions to select the component that best matched the anhedonia component and constructed a mixed-effects model for every selected component. This procedure resulted in 100 effect estimates of phone movement.

The ICA solutions displayed a dichotomy; an example from each class of solutions is shown in Supplementary Figure 5. 69% of the solutions featured a general affect component, with large loadings on the positive affect variables and large, opposite loadings on the negative affect variables, especially for the DRSP variables. The remaining 31% showed the well-being and anhedonia components previously encountered in the main text, which seem a split of the general affect component.

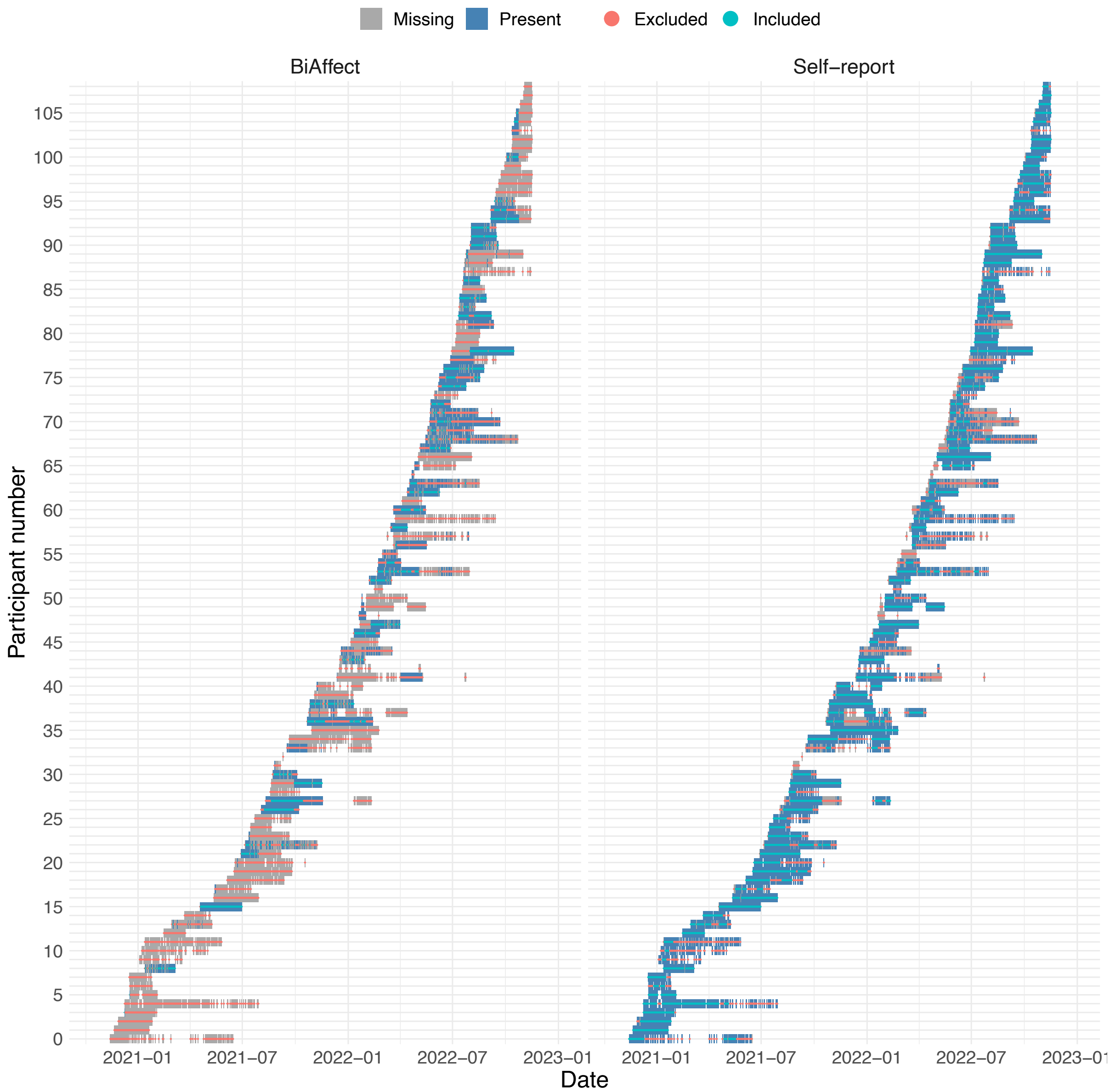


Supplementary Figure 5: Example mixing matrices of the two classes of ICA solutions. *The left panel shows a solution which features the general affect component (IC 1), while the right panel shows the anhedonia component (IC 5). IC = independent component. For the questionnaire abbreviations, please refer to Supplementary Table 1.*

In the ICA solutions where the anhedonia component did not appear, we created a model of the general component instead. All 100 models reported significant associations with phone movement after Bonferroni correction within a single sensitivity iteration ($-0.14 \leq \beta \leq 0.14$, all $p \leq 0.00031$). The sign of the β values were flipped depending on whether the sign of their associated independent component was also flipped. The size of the β and p values depended on the class of the ICA solution: If the ICA solution contained the general component, $|\beta| = 0.14$ and $p < 0.0001$. Otherwise, $|\beta| = 0.12$ and $p \leq 0.00031$. These results can be interpreted as a dilution of the effect when the general component is split into a well-being and anhedonia one.

Even though the general affect solution was more prevalent in our sensitivity analysis, we still decided to discuss the solution with separate well-being and anhedonia components in our main text because 1) the well-being plus anhedonia solution appeared first in our analyses and 2) the splitting of general affect into well-being and anhedonia provides a more fine-grained view of what drives the association with phone movement.

Contiguous data analysis
In the main text, we ran the ICA on all available self-report data. This meant that we also included data from periods with high proportions of missing data, due to which the data stream is not contiguous but fragmented. Temporal ICA is well suited to handle fragmented data since optimising for statistical independence requires assessing the probability density of a source process. ICA does assume, however, that the data were generated from a stationary process. This may not be the case when the distribution underlying data from the periods of fragmentation are very different from the distribution of the contiguous data. Participants might, for example, be less inclined to fill out the self-report items when they are having a bad day and bias the self-report surveys to only measure good days, or vice versa. This non-stationarity could, in turn, affect our ICA results. To test this hypothesis, we reran our sensitivity analysis with the subset of the data that conformed to a contiguity constraint: Self-report data had to be present for at least seven contiguous days. Blocks smaller than seven days would be discarded.



Supplementary Figure 6: Missing data patterns with the contiguity constraint. *In the right panel, all self-report data that are missing or do not comply with the contiguity constraint are marked as excluded (red strikethrough). In the left panel, all BiAffect data that is missing or falls outside the included range of self-report data is marked as excluded.*

Supplementary Figure 6 shows what the data inclusion patterns look like when the contiguity constraint is applied. Because some of the self-report data is excluded, some of the BiAffect data also had to be excluded due to the complete-case requirements of the linear regression models. In total, 4215 days' worth of self-report data (98 participants) were fed into the ICA, and 1454 days' worth of BiAffect and ICA component data (47 participants) were fed into the mixed-effects models.

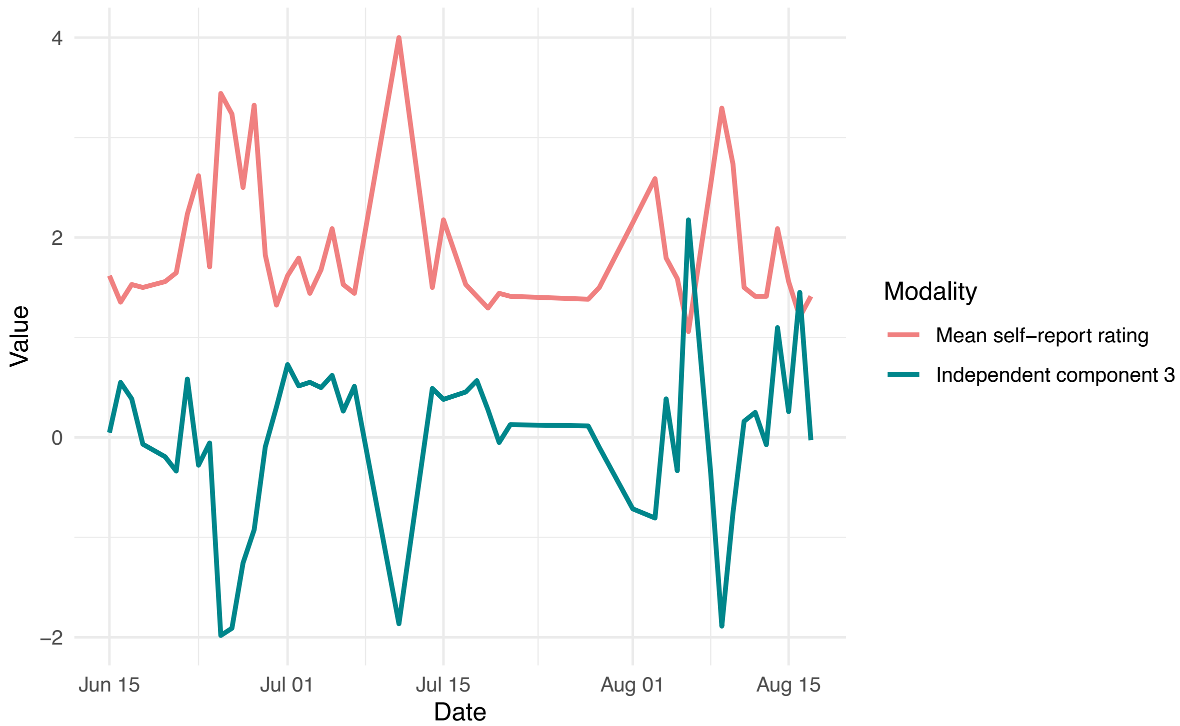
To determine the behaviour of the ICA with contiguous data, we ran the same sensitivity analysis as for the original data. The contiguous ICA solutions showed the same dichotomy as the fragmented ones, but in different proportions: 87% (previously 69%) of the ICA solutions showed the general affect component, while the remaining 13% (previously 31%) showed the split into the well-being and anhedonia components. The solutions with the general component showed a significant effect of phone movement after Bonferroni correction (after rounding, all $|\beta| = 0.12$, all $p \leq 0.00020$); the solutions with the anhedonia component did not ($|\beta| \leq 0.070$, $0.41 \leq p \leq 0.53$). The fact that the proportion of solutions with an anhedonia component has decreased could be interpreted as the consequence of some non-stationarity caused by the fragmented data. Apparently, the fragmented data provide more evidence for separate well-being and anhedonia components, perhaps because the anhedonia items featured more prominently in the fragmented periods. It is, however, also possible that we found the two components more often in the fragmented case simply because that case has more data available to discriminate the two components. The non-significant effects of phone movement on the anhedonia component in the contiguous case contrast with the significant effects in the fragmented case. This contrast can partially be explained by a reduction in statistical power due to the lowered number of data points.

As we pointed out above, if the distributions underlying our data were indeed non-stationary and the periods of missingness in our self-report data were non-random, our entire analysis could be biased towards the days in which participants felt relatively good or bad. Unfortunately, solving the problem of data that are not missing at random (MNAR) is only possible when collecting additional data or making assumptions about the missing data mechanisms.[2] We currently have too little knowledge about what happens to our participants during the periods of missingness and what effect that would have on both the self-report and keyboard dynamics data to properly impute the missing data. For that reason, we decided to do a complete case analysis instead, accepting the potential bias that would introduce.

The model order analysis was also repeated for the contiguous case. For brevity, we do not present the results here, but the patterns in the higher-order ICA solutions are similar to those found in the fragmented case.

Within-participants mean-centring

In the main text, we found a component with moderate to low negative loadings on all self-report items (IC 3). To examine whether this component might represent a mean offset of self-report ratings for some of our participants, we averaged the self-report ratings per participant and compared them to the component values. More specifically, we first averaged self-report item ratings within participant and within item, and then averaged again within participants but across items. IC 3 values were also averaged within participants. The averaged self-report and

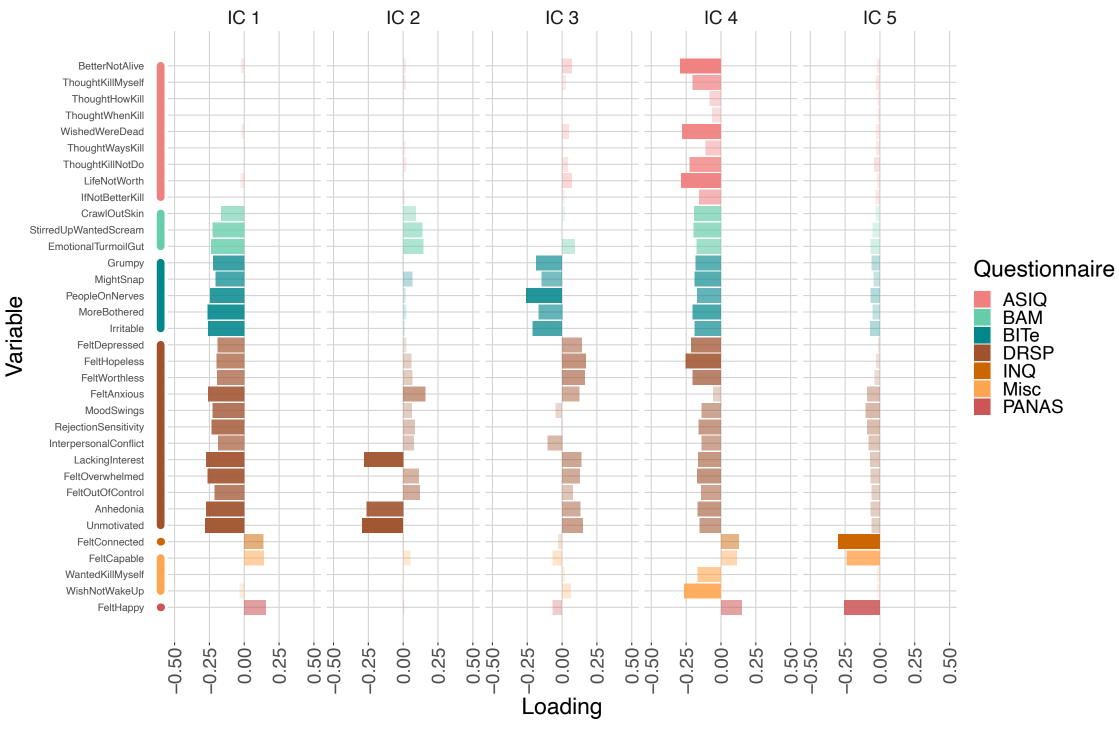


Supplementary Figure 7: A participant's average daily rating and IC 3 value over time.

component values showed a negative correlation (Pearson's r(102) = -.72, 95% CI [-0.80, -0.61], two-tailed $p < 0.0001$). For some participants, this relationship was particularly clear (see Supplementary Figure 7). While this indicates that IC 3 does indeed represent a mean offset component, it does not mean that it has absorbed all of the participants' mean information. For example, the participant-level random intercepts (not shown) of all mixed-effects models described in the main text were non-zero, demonstrating that all independent components still contain some between-participant mean differences.

To further examine the effect of the participant means on our ICA solution, we mean-centred all self-report data (including fragmented data) within participants before running the ICA. Supplementary Figure 8 shows the mixing matrix of the corresponding ICA solution. The component with negative loadings on all items is no longer present, indicating that such a component did indeed represent participant-specific offsets for all self-report items. Moreover, we find further splitting of components found in other ICA solutions. The general affect pattern (negative loadings on negative affect items and positive loadings on well-being items, or vice versa) is still present as IC 4, but the high loadings for the well-being items and anhedonia items have split off into IC 1, 2, and 5, with small to moderate loadings on all other variables. A possible explanation for this behaviour is the fact that the absence of the offset component frees up a component for some additional splitting.

Finally, we created mixed-effects models from these components and the BiAffect data. As expected, participant-level random intercepts (not shown) were now close to zero. Fixed-effect estimates are given in Supplementary Table 4. The models for ICs 1 and 2, which feature relatively high (negative) anhedonia loadings, display a nominally significant effect of phone movement rate that is reduced w.r.t. the original models. We suspect this might be caused by a dilution of the original effect over multiple ICs, which was made possible by the removal of the mean offset component. In addition, the participant means might carry information that the mixed-effects models use for individualised predictions.



Supplementary Figure 8: Mixing matrix of the ICA solution of participant-centred data. *IC = independent component.*

	IC 1			IC 2			IC 3			IC 4			IC 5		
	β	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**	**β**	**p'**	**p**
Median IKD	0.017	0.72	1	-0.11	0.019	0.77	0.064	0.17	1	-0.017	0.70	1	-0.012	0.79	1
95th percentile IKD	-0.038	0.33	1	0.075	0.066	1	-0.053	0.19	1	0.0057	0.88	1	-0.025	0.52	1
MAD IKD	-0.024	0.55	1	0.021	0.62	1	-0.043	0.29	1	0.052	0.18	1	0.028	0.50	1
Autocorrect rate	-0.017	0.58	1	-0.0025	0.93	1	-0.014	0.64	1	-0.020	0.49	1	-0.022	0.44	1
Backspace rate	-0.013	0.65	1	-0.015	0.61	1	0.0042	0.88	1	-0.0072	0.79	1	0.0076	0.77	1
Total number of key presses	-0.049	0.085	1	-0.0016	0.96	1	-0.055	0.060	1	-0.0038	0.89	1	-0.053	0.050	1
Movement rate	0.082	0.0060	0.24	0.060	0.047	1	-0.085	0.0051	0.21	0.079	0.0054	0.22	-0.025	0.37	1
Upright rate	-0.029	0.32	1	-0.013	0.66	1	-0.011	0.70	1	0.042	0.13	1	-0.030	0.28	1

Supplementary Table 4 Effect estimates of models for within-participant mean-centred independent components. *p' indicates uncorrected p values, p indicates Bonferroni-corrected p values. IC = independent component; IKD = inter-key delay; MAD = mean absolute deviation.*

Forwards-fitting of random effects

We tested the benefit of random slopes by running a forwards-fitting procedure on the 5-component mixed-effects models as specified in the main text. This procedure would add one random slope variance parameter at a time, either on level 1 (participant) or level 2 (week within participant), constraining the random effects covariance matrix to be diagonal. Likelihood ratio tests were conducted for all pairs of nested models to decide whether the additional slope parameter improved the model significantly.

The resulting models are shown in Supplementary Table 5. Notice that for the models for IC 2 and 3, the procedure did not converge to a single largest model. For IC 5, there were no significant improvements over the base model. None of the models had a large impact on the fixed-effects estimates, which we do not show for brevity. In other words, the conclusions we drew from the models in the main text remained unchanged.

	Level 1 (participant)	**Level 2 (week within participant)**
IC 1		Backspace rate, 95th percentile IKD
IC 2 (a)	Total number of key presses, upright	Total number of key presses
IC 2 (b)	Total number of key presses, upright	Movement rate
IC 2 (c)	Total number of key presses	Movement rate, upright rate
IC 2 (d)	Total number of key presses	Total number of key presses, upright
IC 3 (a)	Movement rate	
IC 3 (b)		Movement rate
IC 4		Autocorrect rate

Supplementary Table 5 Random slopes that were significant additions to their nested models. *IC = independent component; IKD = inter-key delay.*

References

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