

O-ACE POP Analysis

Code

Matti Vuorre
University of Oxford
2022-05-06

Preface

This document describes the O-ACE POP study data analyses. The data and code underlying these analyses are available at <https://osf.io/9wt8d/>.

We used the following R packages.

Code

The survey data is contained in .xlsx files in 'data/'. Here we load and clean the data tables.

Demographics

First, a table of aggregate demographics. Note the data underlying this table is not shared due to small cell sizes and potential identifiability.

Characteristic	Overall, N = 463 ¹	Ash, N = 232 ¹	WoB, N = 231 ¹
Age			
16-17	41 (8.9%)	15 (6.5%)	26 (11%)
18-24	422 (91%)	217 (94%)	205 (89%)
Gender			
Female	276 (60%)	138 (59%)	138 (60%)
Male	179 (39%)	90 (39%)	89 (39%)
Other/ prefer not to say	8 (1.7%)	4 (1.7%)	4 (1.7%)
Ethnicity			
Asian British (Indian Pakistani or Bangladeshi)	33 (7.1%)	18 (7.8%)	15 (6.5%)
Black/Black British (Caribbean African or Other)	22 (4.8%)	11 (4.7%)	11 (4.8%)
Chinese/Chinese British	10 (2.2%)	5 (2.2%)	5 (2.2%)
Mixed race (Other)	17 (3.7%)	6 (2.6%)	11 (4.8%)
Mixed race (White and Black/Black British)	15 (3.2%)	9 (3.9%)	6 (2.6%)
Other/prefer not to say	6 (1.3%)	3 (1.3%)	3 (1.3%)
White (British Irish or Other)	360 (78%)	180 (78%)	180 (78%)
Occupation			
At school	48 (10%)	23 (9.9%)	25 (11%)
In full-time employment (not studying)	113 (24%)	64 (28%)	49 (21%)
In part-time employment (not studying)	84 (18%)	45 (19%)	39 (17%)
On furlough (not studying)	14 (3.0%)	4 (1.7%)	10 (4.3%)
Other	27 (5.8%)	13 (5.6%)	14 (6.1%)
Studying and not working	113 (24%)	56 (24%)	57 (25%)
Studying and working	64 (14%)	27 (12%)	37 (16%)
Relationship			
In a relationship/Living with partner	85 (18%)	43 (19%)	42 (18%)
In a relationship/Not living with partner	146 (32%)	74 (32%)	72 (31%)
Other	6 (1.3%)	2 (0.9%)	4 (1.7%)
Single	226 (49%)	113 (49%)	113 (49%)
Household income			
£16 000 - £29 999 a year	81 (17%)	44 (19%)	37 (16%)
£30 000 - £59 999 a year	144 (31%)	67 (29%)	77 (33%)
Less than £16 000 a year	88 (19%)	44 (19%)	44 (19%)
More than £60 000 a year	115 (25%)	62 (27%)	53 (23%)
Prefer not to say	35 (7.6%)	15 (6.5%)	20 (8.7%)
OCC_Engagement_Frequency			
Between once a month and once a year	156 (34%)	76 (33%)	80 (35%)
More than once a month (but less than once a week)	115 (25%)	59 (25%)	56 (24%)
Once a week or more	123 (27%)	62 (27%)	61 (26%)
Rarely/Never (No more than once a year)	69 (15%)	35 (15%)	34 (15%)
Current_Mental_Health			
No	218 (47%)	114 (49%)	104 (45%)
Yes	245 (53%)	118 (51%)	127 (55%)
Current_Health			
No	393 (85%)	202 (87%)	191 (83%)
Yes	70 (15%)	30 (13%)	40 (17%)
Covid_19_Diagnosis			
No	367 (79%)	190 (82%)	177 (77%)
Suspected and recovered	43 (9.3%)	10 (4.3%)	33 (14%)
Suspected and still ill	22 (4.8%)	11 (4.7%)	11 (4.8%)
Yes diagnosed and recovered	24 (5.2%)	18 (7.8%)	6 (2.6%)
Yes diagnosed and still ill	7 (1.5%)	3 (1.3%)	4 (1.7%)
Isolation_Status			
I am leaving the house as normal	64 (14%)	31 (13%)	33 (14%)
I am leaving the house for work/essential responsibilities but practising social distancing where possible	183 (40%)	87 (38%)	96 (42%)
I am leaving the house only for essential supplies and daily exercise	149 (32%)	75 (32%)	74 (32%)
I am not leaving the house at all and have no access to outside space	22 (4.8%)	14 (6.0%)	8 (3.5%)
I am not leaving the house at all but have access to outside space (e.g. garden)	45 (9.7%)	25 (11%)	20 (8.7%)
Antidepressant			
No	363 (78%)	175 (75%)	188 (81%)
Yes	100 (22%)	57 (25%)	43 (19%)
Baseline_mild_MH²			
No	355 (77%)	172 (74%)	183 (79%)
Yes	108 (23%)	60 (26%)	48 (21%)
Baseline_moderate_MH²			
No	327 (71%)	167 (72%)	160 (69%)
Yes	136 (29%)	65 (28%)	71 (31%)
Baseline_severe_MH²			
No	294 (63%)	146 (63%)	148 (64%)
Yes	169 (37%)	86 (37%)	83 (36%)

¹n (%)
²Mild, moderate, and severe MH. A score of 20-24 was defined as being consistent with probable mild disorder, 25-29 with a probable moderate disorder and 30 and over with a probable severe disorder.

Then we create a table of demographics for the subgroup analyses.

We also create a synthetic demographics table for sharing on OSF, with only the PIDs and group assignments reflecting real values, and the actual demographics values are simulated (due to small cell sizes and potential identifiability of participants).

Then we load either the actual demographics values if available (only available to OACE team), otherwise the simulated demographics table (available on OSF).

```
## Warning: Actual demographics data loaded
```

Characteristic	Overall, N = 463 ¹	Ash, N = 232 ¹	WoB, N = 231 ¹
Age1617	41 (8.9%)	15 (6.5%)	26 (11%)
Male	179 (39%)	90 (39%)	89 (39%)
Antidepressant	100 (22%)	57 (25%)	43 (19%)
Relationship	231 (50%)	117 (50%)	114 (49%)
White	375 (81%)	189 (81%)	186 (81%)
OCC_Engagement	238 (51%)	121 (52%)	117 (51%)
Baseline_moderate_MH	136 (29%)	65 (28%)	71 (31%)

Clean data sets more and add demographics variables (covariates & subgroups).

Main analysis

Means and change over time

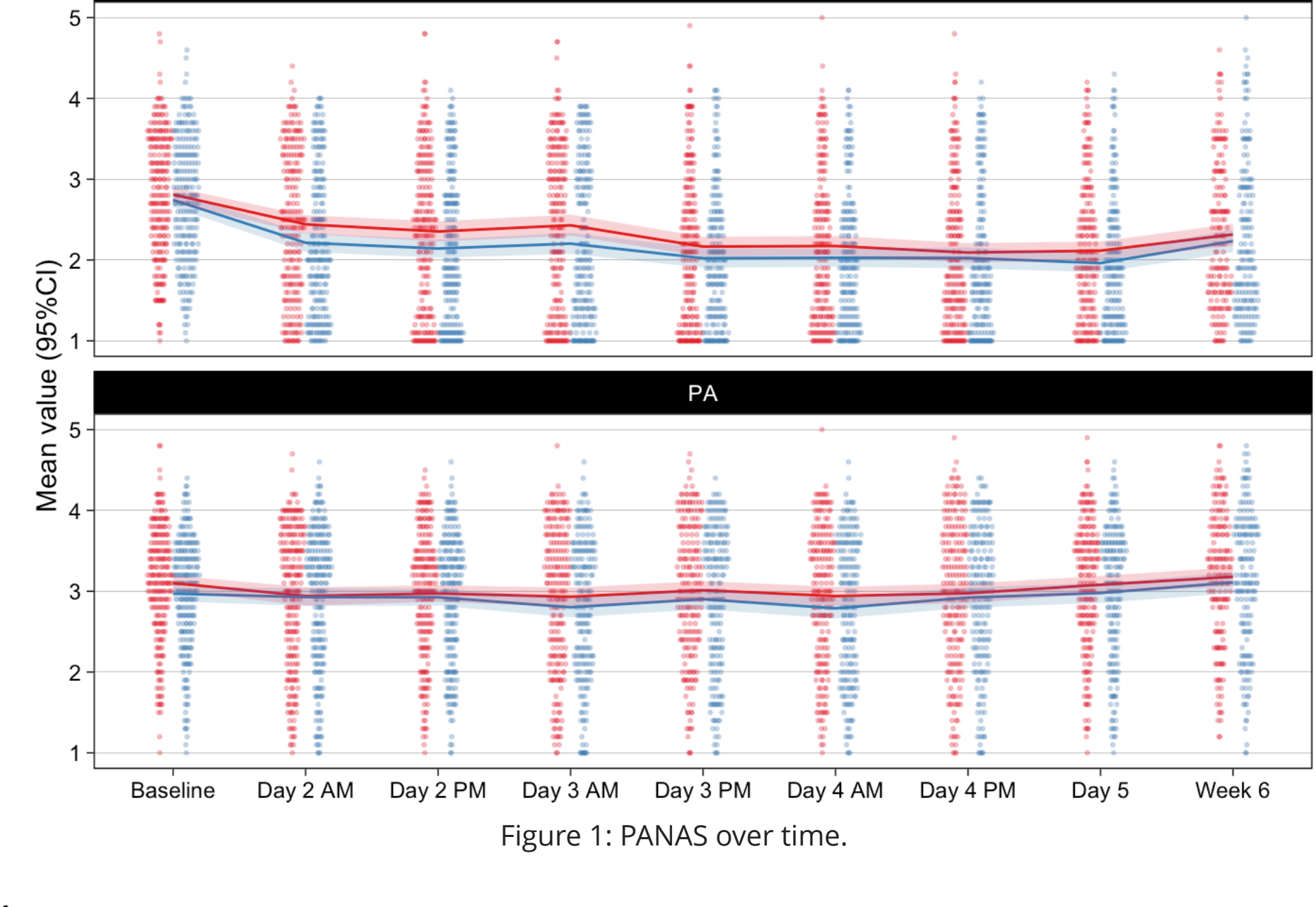


Figure 1: PANAS over time.

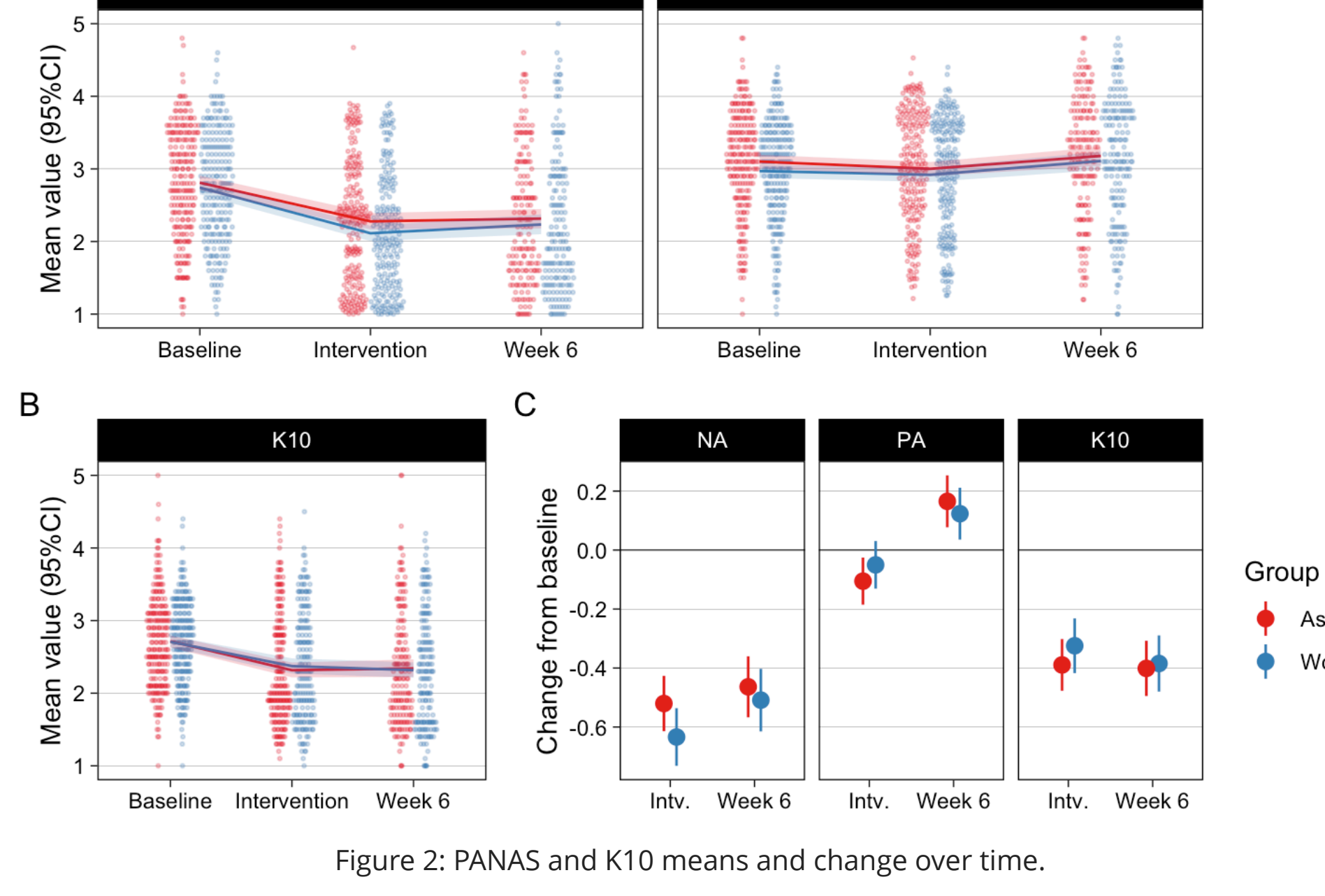


Figure 2: PANAS and K10 means and change over time.

Means with bootstrapped CIs in numbers

Table 1: Means

Outcome	Time	y	ymin	ymax
NA	Baseline	2.8	2.7	2.8
NA	Intervention	2.2	2.1	2.3
NA	Week 6	2.3	2.2	2.4
PA	Baseline	3.0	3.0	3.1
PA	Intervention	3.0	2.9	3.0
PA	Week 6	3.1	3.1	3.2
K10S	Baseline	27.1	26.6	27.7
K10S	Intervention	23.4	22.7	24.1
K10S	Week 6	23.3	22.5	24.2

Change from baseline in numbers

Table 2: Change from baseline

Group	Outcome	Time	estimate	SE	lower.CL	upper.CL	p.value
WoB	NA	Intervention	-0.634	0.050	-0.732	-0.536	0.000
WoB	NA	Week 6	-0.509	0.054	-0.615	-0.403	0.000
WoB	PA	Intervention	-0.050	0.041	-0.131	0.031	0.224
WoB	PA	Week 6	0.123	0.045	0.036	0.211	0.006
WoB	K10	Intervention	-0.324	0.047	-0.417	-0.232	0.000
WoB	K10	Week 6	-0.385	0.048	-0.480	-0.289	0.000
Ash	NA	Intervention	-0.520	0.048	-0.614	-0.426	0.000
Ash	NA	Week 6	-0.464	0.053	-0.567	-0.360	0.000
Ash	PA	Intervention	-0.105	0.041	-0.185	-0.025	0.010
Ash	PA	Week 6	0.165	0.045	0.077	0.253	0.000
Ash	K10	Intervention	-0.389	0.045	-0.477	-0.302	0.000
Ash	K10	Week 6	-0.401	0.048	-0.495	-0.308	0.000

Clinically significant symptoms

Table 3: Percentages of individuals with clinically significant symptoms

Time	Group	n	K10 > 19
Baseline	Ash	232	90.9%
Baseline	WoB	231	87.4%
Intervention	Ash	206	57.3%
Intervention	WoB	191	62.8%
Week 6	Ash	172	59.3%
Week 6	WoB	177	62.1%

Group differences

We estimate group differences with a multilevel model of each outcome, using baseline outcome (mean centered), group indicator (0/1 coded), and contrast coded (-0.5, 0.5) covariates age, gender, ethnicity, relationship, and current antidepressant use as predictors. In addition, we used timepoint and all its interactions as a predictor to get timepoint specific group effects.

Table 4: Time point specific ANCOVA model results for each of the main outcomes.

Outcome	contrast	Time	estimate	SE	lower.CL	upper.CL	t.ratio	p.value	N
NA	WoB - Ash	Intervention	-0.158	0.061	-0.278	-0.038	-2.592	0.010	448
NA	WoB - Ash	Week 6	-0.090	0.068	-0.223	0.044	-1.319	0.187	448
PA	WoB - Ash	Intervention	0.031	0.055	-0.076	0.139	0.569	0.570	448
PA	WoB - Ash	Week 6	-0.083	0.060	-0.200	0.034	-1.387	0.166	448
K10	WoB - Ash	Intervention	0.069	0.060	-0.048	0.186	1.158	0.247	397
K10	WoB - Ash	Week 6	0.015	0.063	-0.109	0.140	0.241	0.809	397

Subgroup analyses

The subgroup analyses are conducted on each outcome over the intervention phase (for NA and PA averaged over the intervention phase time points and K10at day 5).

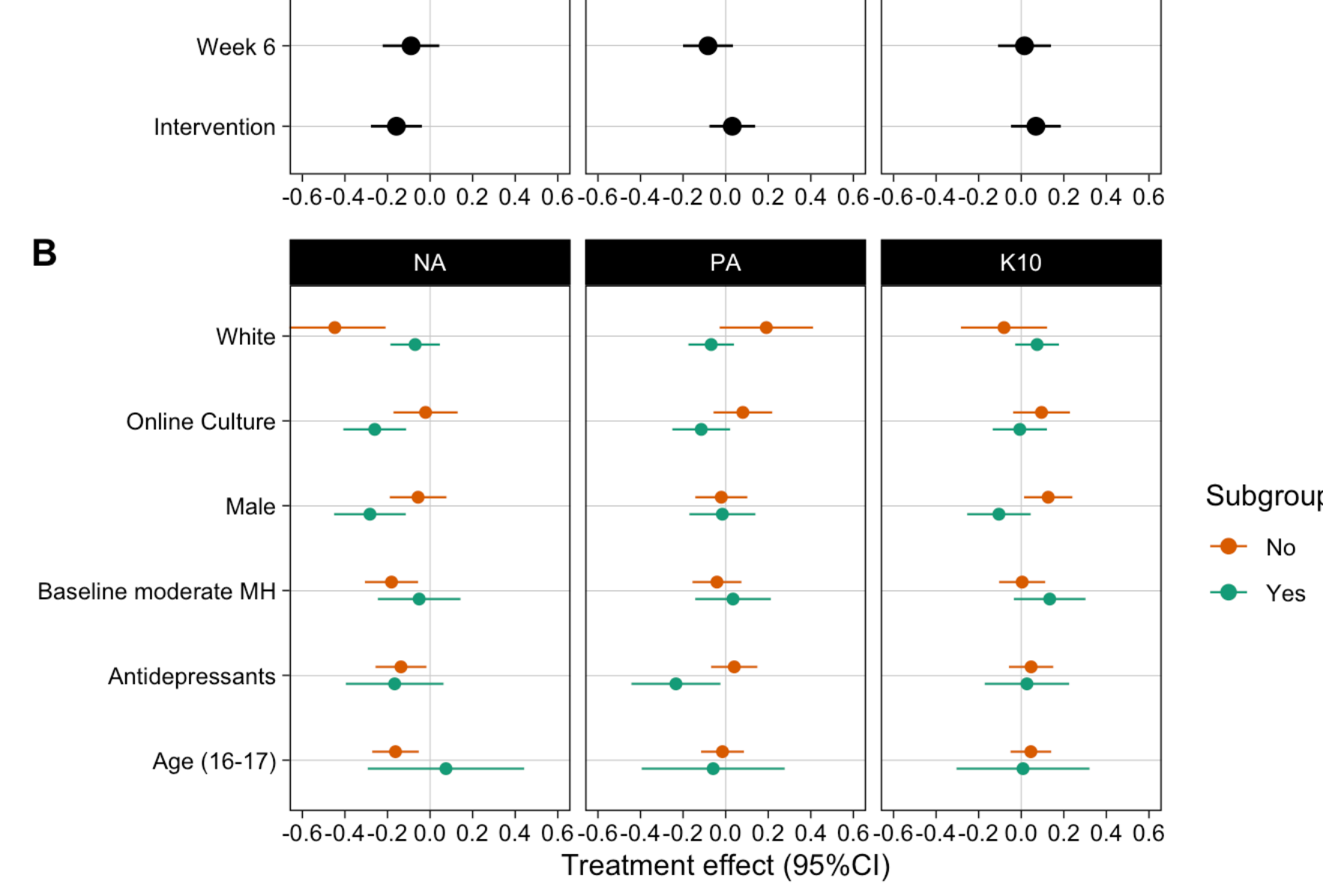


Figure 3: A) Treatment effect (WoB - Ash) at each time point for the main outcomes. B) Treatment effect for each subgroup included in the analyses (on the mean outcome during the intervention).

Flourishing & Loneliness

Means and change over time

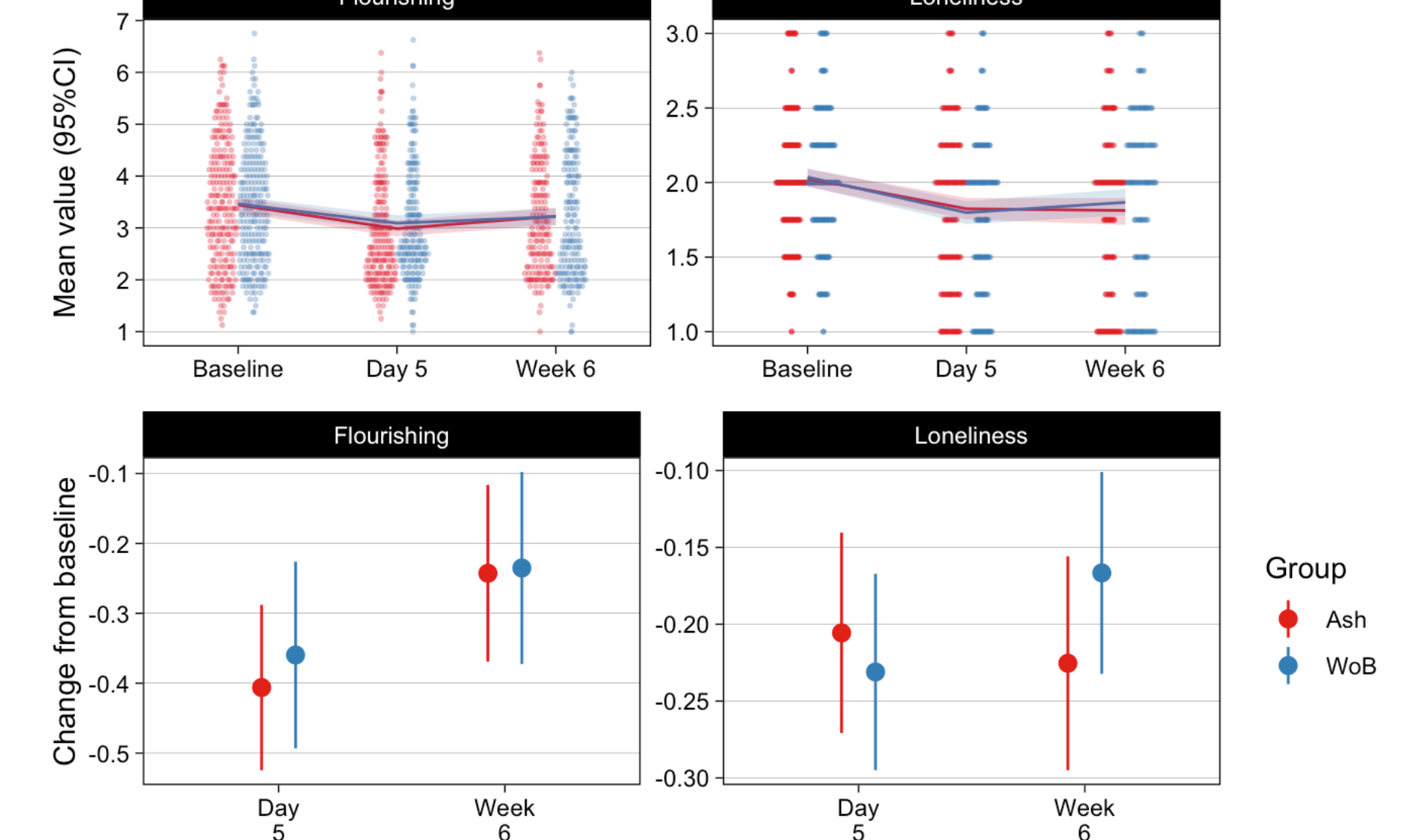


Figure 4: Flourishing and Loneliness means and change over time.

Group differences

Table 5: Time point specific ANCOVA model results.

Outcome	contrast	Time	estimate	SE	lower.CL	upper.CL	p.value	N
Flourishing	WoB - Ash	Day 5	0.053	0.080	-0.105	0.211	0.512	397
Flourishing	WoB - Ash	Week 6	0.003	0.085	-0.163	0.170	0.970	397
Loneliness	WoB - Ash	Day 5	-0.026	0.047	-0.118	0.067	0.586	397
Loneliness	WoB - Ash	Week 6	0.064	0.049	-0.032	0.160	0.194	397