MiWaves MRT Analyses Results

Frequencies of Baseline Covariates

Firstly, there are two baseline records for IDs 9, 55 and 102, and for these three IDs I retain the second baseline record. The two baseline submissions are likely due to the survey timing out and participants re-submitting.

1.) CANN_IMPORTANCE_BL: "Right now, how important is it to you to cut back your cannabis use?" Response: 0-10 likert scale: 0=Not at all, 10=Very

Other options:

- CANN_LIKELY_BL: "Right now, how likely are you to cut back your use of cannabis or cannabis products?" Response: scale of 0=Not at all - 10=Very
- CANN_CONF_BL: "How confident are you that you could cut back your use of cannabis or cannabis products if you wanted to?" Response: scale of 0=Not at all - 10=Very

2.) CANNHOURS_BL: "During the past month, how many hours, on an average day, did you use cannabis?" Response: Drop down selection 0-24

3.) CANNWAKE_BL: "During the past month, how soon did you typically use any cannabis products after you woke up for the day?" Response: 1=Within 5 minutes, 2=6-30 minutes, 3=31 minutes to almost 1 hour, 4=1 to almost 2 hours, 5=2 to almost 4 hours, 6=4 or more hours

Other options:

- CANNDAYS_BL: "How many days in the past month have you used cannabis?" Response: Drop down selection 0-31
- CANNMONTH_BL: "In the past month, how many times per day did you use cannabis?" Response: Drop down selection 0-24

Note: If CANNDAYS_BL>0, then displays CANNHOURS_BL, CANNWAKE_BL, CANNMONTH_BL, CANN_IMPORTANCE_BL, CANN_LIKELY_BL, CANN_CONF_BL.

Table 1: Frequency of baseline variable cannabis importance ($N = 120 EAs$)

cann_importance_bl	count	percent
0	3	2.5
1	5	4.2
2	13	10.8
3	11	9.2
4	18	15.0
5	24	20.0
6	13	10.8
7	17	14.2
8	11	9.2
9	1	0.8
10	3	2.5

Table 2: Frequency of baseline variable cannabis hours ($N = 120 EAs$)

cannhours_bl	count	percent
0	1	0.8
1	16	13.3
2	34	28.3
3	28	23.3
4	13	10.8
5	8	6.7
6	8	6.7
7	1	0.8
8	2	1.7
10	2	1.7
11	1	0.8
13	1	0.8
14	1	0.8
17	1	0.8
24	2	1.7

Table 3: Frequency of baseline variable cannabis after waking ($N = 120 EAs$)

cannwake_bl	count	percent
0	9	7.5
1	4	3.3
3	18	15.0
4	6	5.0
5	13	10.8
6	69	57.5

Preliminary Causal Excursion Effect Estimates

Research Question 1: Examine whether, on average, there is a proximal effect of delivering an intervention message on proximal cannabis use

Proximal outcome ($Y_{i,t+1}$): Proportion of waking hours with self-reported cannabis use (0-1, treated as continuous)

Treatment indicator ($A_{i,t}$): Binary (1=Yes message, 0=No message)

Covariates:

- time of day – binary (AM=0, PM=1),
- day of the week – binary (weekday=1, weekend [Fri-Sun]=0),
- prior cannabis use – proportion of waking hours averaged over past 4 decision points (i.e., approximately 48 hours),
- prior intervention engagement – score that ranges from 0-3 averaged over past 6 decision points (i.e., approximately 72 hours),
- baseline motivation to change – importance of cutting back cannabis use on a scale from 0 (Not at all) to 10 (Very) at time of baseline survey,
- baseline cannabis use – self-reported average hours of cannabis use in prior day (range: 0-24), during the past month, and
- baseline time to cannabis use - self-reported time to cannabis use, since awaking (1=Within 5 minutes, 2=6-30 minutes, 3=31 minutes to almost 1 hour, 4=1 to almost 2 hours, 5=2 to almost 4 hours, 6=4 or more hours), during the past month.

Candidate Moderators: We explore whether the effect of the intervention message on proximal cannabis use varries by each of the candidate moderators listed below.

1. *timeofday*: time of day – binary (AM=1, PM=0),
2. *interact_A_message*: interaction type A message vs. no message – binary (interaction type A message=1, no message=0),

- 2.2. *interact_B_message*: interaction type B message vs. no message – binary (interaction type B message=1, no message=0),
- 2.3. *interact_C_message*: interaction type C message vs. no message – binary (interaction type C message=1, no message=0),

3. *prop_awakeuse_prior*: prior cannabis use – operationalized the same as the proximal outcome, at the prior decision point,

- 3.2. *cov_prop_awakeuse_48hrs*: prior cannabis use over the past 4 decision points,

4. time since under treatment (i.e., since study start) possibly, in weeks,
5. *week_day_binary1*: day of the week – binary (weekday=1, weekend [Fri-Sun]=0),
6. *prior_interv_engag*: prior intervention engagement – operationalized the same as the proximal outcome, at the prior decision point,

- 6.2. *cov_interv_engag_72hrs*: over past 6 decision points,

7. *prior_sent_message*: prior delivery of a message – binary (yes message=1, no message=0), at the prior decision point,

- 7.2. number of messages, over past 4 decision points,

8. *short_message*: short message vs. no message – binary (short message=1, no message=0),

- 8.2. *long_message*: long message vs. no message - binary (long message=1, no message=0),

9. baseline demographic: biological sex, race/ethnicity (in screening data),
10. baseline cannabis use severity: a cannabis frequency perspective - via the CANNDAYS_BL (number of days used cannabis in past month),

- 10.2. based on diagnostic severity, DSMSC1_BL through DSMSC11_BL, count of number of symptoms endorsed,

11. baseline motivation to change, and
12. baseline mental health (e.g., PHQ-2)

Term	Estimate	95% LCL	95% UCL	StdErr	Wald	df1	df2	p-value
Main Effect Model (no covars)								
Intercept	0.009	-0.009	0.026	0.009	1.002	1	117	0.319
Main Effect Model (with covars)								
Intercept	0.006	-0.008	0.021	0.007	0.755	1	110	0.387
Moderation Effect Model 1								
Intercept	0.008	-0.007	0.023	0.007	1.149	1	109	0.286
timeofday	-0.004	-0.032	0.025	0.014	0.068	1	109	0.795
Moderation Effect Model 2								
Intercept	0.011	-0.012	0.034	0.012	0.969	1	110	0.327
Moderation Effect Model 2.2								
Intercept	0.009	-0.013	0.030	0.011	0.651	1	110	0.422
Moderation Effect Model 2.3								
Intercept	-0.001	-0.019	0.016	0.009	0.026	1	110	0.872
Moderation Effect Model 3								
Intercept	0.006	-0.011	0.022	0.008	0.483	1	109	0.488
prop_awakeuse_prior	0.020	-0.034	0.073	0.027	0.535	1	109	0.466
Moderation Effect Model 3.2								
Intercept	-0.003	-0.022	0.015	0.009	0.144	1	109	0.705
cov_prop_awakeuse_48hrs	0.044	-0.041	0.129	0.043	1.035	1	109	0.311
Moderation Effect Model 5								
Intercept	0.002	-0.023	0.027	0.012	0.025	1	109	0.875
week_day_binary1	0.007	-0.025	0.040	0.016	0.194	1	109	0.661
Moderation Effect Model 6								
Intercept	-0.009	-0.042	0.024	0.017	0.318	1	109	0.574
prior_interv_engag	0.008	-0.010	0.026	0.009	0.835	1	109	0.363
Moderation Effect Model 6.2								
Intercept	-0.020	-0.084	0.044	0.032	0.387	1	109	0.535
cov_interv_engag_72hrs	0.014	-0.019	0.047	0.017	0.680	1	109	0.411
Moderation Effect Model 7								
Intercept	0.003	-0.016	0.021	0.009	0.085	1	108	0.771
prior_sent_message	0.008	-0.021	0.038	0.015	0.302	1	108	0.584

Notes: Standard errors are not yet adjusted to account for RL uncertainty.
Moderation Effect Models include the covariates: time of day, day of week,
prior cannabis use, prior intervention engagement, baseline motivation to change,
baseline cannabis use, and baseline time to cannabis use.