

SARA: Results

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This document provides results of analyses of the SARA Micro-Randomized Trial (MRT) data. Other material relevant to curation and analysis of the SARA MRT data are provided at <https://github.com/jamieyap/SARA>

1 Background

1.1 Main Analysis

Hypotheses corresponding to each aim are:

- Aim 1: *Offering (vs. not offering) an inspirational quote increases the likelihood to fully complete current day's survey and/or active tasks. This hypothesis is directional; our goal is to increase survey and/or active task completion.* This corresponds to testing $H_0 : \beta \leq 0$ vs. $H_1 : \beta > 0$ where β is the marginal treatment effect on the log scale.
- Aim 2: *Offering positive reinforcement in the form of a meme (vs. not offering meme) following survey completion increases the likelihood to fully complete next day's survey and/or active tasks. This hypothesis is directional; our goal is to increase survey and/or active task completion.* This corresponds to testing $H_0 : \beta \leq 0$ vs. $H_1 : \beta > 0$ where β is the marginal treatment effect on the log scale.
- Aim 4: *Offering life insights (vs. not offering life insights) following active task completion increases the likelihood to fully complete next day's survey and/or active tasks. This hypothesis is directional; our goal is to increase survey and/or active task completion.* This corresponds to testing $H_0 : \beta \leq 0$ vs. $H_1 : \beta > 0$ where β is the marginal treatment effect on the log scale.

In main analysis, we perform a one-sided test with $\alpha = 0.025$ and the following control covariates:

- appusage_yes
- isCompleted_yesterday_yes
- contact_yes

1.2 Analysis with Moderators

We conduct exploratory analysis on the moderated effect of offering vs. not offering 4PM notification. We use the same set of participant days as in Main Aim 1 Analysis for this purpose. The moderated treatment effect on the log scale is modeled as $\beta_1 + \beta_2 X$ where moderators X considered were:

- female: 1 if individual is female, 0 if individual is male
- weekend: 1 if day is Saturday or Sunday, 0 if day is between Monday to Friday
- appusage_yes
- isCompleted_yesterday_yes
- contact_yes
- study_day

In the models above, we test the hypothesis $H_0 : c\beta = 0$ vs. $H_1 : c\beta \neq 0$ where $\beta = (\beta_1, \beta_2)$. We perform a two-sided test and use $\alpha = 0.05$ and the use same set of control covariates in primary analysis:

- appusage_yes
- isCompleted_yesterday_yes
- contact_yes

Analyses were also conducted to examine the moderated effect of offering a meme vs. not offering a meme and the moderated of offering a life insight vs. not offering a life insight.

1.3 More Analysis with Moderators

We conduct additional exploratory analysis on the moderated effect of offering vs. not offering 4PM notification when the moderated treatment effect on the log scale is modeled as $\beta_1 + \beta_2 X_1 + \beta_3 X_2 + \beta_4 X_3 + \beta_5 X_4$ where

- X_1 = weekend
- X_2 = contact_yes
- X_3 = appusage_yes
- X_4 = isCompleted_yesterday_yes

We test the hypothesis $H_0 : c\beta = 0$ vs. $H_1 : c\beta \neq 0$ where $\beta = (\beta_1, \beta_2, \beta_3, \beta_4, \beta_5)$ and c is some vector of real numbers. We perform a two-sided test and use $\alpha = 0.05$ and the use same set of control covariates in primary analysis:

- appusage_yes
- isCompleted_yesterday_yes
- contact_yes

Analyses were also conducted to examine the moderated effect of offering a meme vs. not offering a meme and the moderated of offering a life insight vs. not offering a life insight.

1.4 Analyses with Complete Case Data vs. Multiply Imputed Data

Main analyses and exploratory analyses were performed using complete case data and multiply imputed data. **Analyses with Complete Case Data.** Analysis with complete case data involved omitting participant days with missing intervention assignment from the data analysis. **Analyses with Multiply Imputed Data.** 10 imputed datasets were generated where in each imputed dataset, missing intervention assignment among available participant days were imputed by drawing from a *Bernoulli* ($\frac{1}{2}$) distribution. Estimates of model parameters and standard errors were obtained using each imputed dataset and then pooled using the usual rules for combining inferences for multiple imputation (Little & Rubin, 1987).

2 Aim 1

2.1 Complete Case Analysis

Table 1 : Complete Case Analysis: Main Analysis

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta | 1.053 | 0.052 | 0.041 | 1.254 | 0.107 |
| Intercept | 0.289 | -1.241 | 0.150 | -8.278 | 0.000 |
| appusage_yes | 1.885 | 0.634 | 0.173 | 3.670 | 0.001 |
| isCompleted_yesterday_yes | 1.522 | 0.420 | 0.111 | 3.768 | 0.000 |
| contact_yes | 0.840 | -0.174 | 0.038 | -4.539 | 0.000 |

Table 2 : Complete Case Analysis: appusage_yes=1 vs. appusage_yes=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 1.345 | 0.296 | 0.155 | 1.918 | 0.060 |
| beta2 | 0.761 | -0.273 | 0.156 | -1.747 | 0.086 |
| contrast: appusage_yes=0 | 1.345 | 0.296 | 0.155 | 1.918 | 0.060 |
| contrast: appusage_yes=1 | 1.024 | 0.023 | 0.040 | 0.585 | 0.561 |
| Intercept | 0.254 | -1.371 | 0.179 | -7.643 | 0.000 |
| appusage_yes | 2.268 | 0.819 | 0.210 | 3.896 | 0.000 |
| isCompleted_yesterday_yes | 1.453 | 0.374 | 0.103 | 3.612 | 0.001 |
| contact_yes | 0.840 | -0.174 | 0.038 | -4.525 | 0.000 |

Table 3 : Complete Case Analysis: contact_yes=1 vs. contact_yes=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 1.019 | 0.019 | 0.046 | 0.414 | 0.680 |
| beta2 | 1.086 | 0.082 | 0.073 | 1.123 | 0.266 |
| contrast: contact_yes=0 | 1.019 | 0.019 | 0.046 | 0.414 | 0.680 |
| contrast: contact_yes=1 | 1.106 | 0.101 | 0.066 | 1.542 | 0.128 |
| Intercept | 0.296 | -1.217 | 0.152 | -8.029 | 0.000 |
| appusage_yes | 1.896 | 0.639 | 0.173 | 3.697 | 0.000 |
| isCompleted_yesterday_yes | 1.500 | 0.405 | 0.111 | 3.635 | 0.001 |
| contact_yes | 0.807 | -0.215 | 0.057 | -3.765 | 0.000 |

Table 4 : Complete Case Analysis: isCompleted_yesterday_yes=1 vs. isCompleted_yesterday_yes=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------------------|-------|--------|---------|-----------|-------|
| beta1 | 1.158 | 0.147 | 0.111 | 1.327 | 0.189 |
| beta2 | 0.886 | -0.121 | 0.105 | -1.149 | 0.255 |
| contrast: isCompleted_yesterday_yes=0 | 1.158 | 0.147 | 0.111 | 1.327 | 0.189 |
| contrast: isCompleted_yesterday_yes=1 | 1.027 | 0.026 | 0.035 | 0.758 | 0.452 |
| Intercept | 0.283 | -1.263 | 0.149 | -8.490 | 0.000 |
| appusage_yes | 1.797 | 0.586 | 0.178 | 3.292 | 0.002 |
| isCompleted_yesterday_yes | 1.647 | 0.499 | 0.151 | 3.303 | 0.002 |
| contact_yes | 0.847 | -0.166 | 0.038 | -4.420 | 0.000 |

Table 5 : Complete Case Analysis: female=1 vs. female=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 1.060 | 0.059 | 0.073 | 0.806 | 0.424 |
| beta2 | 0.988 | -0.012 | 0.092 | -0.135 | 0.893 |
| contrast: male | 1.060 | 0.059 | 0.073 | 0.806 | 0.424 |
| contrast: female | 1.047 | 0.046 | 0.052 | 0.886 | 0.379 |
| Intercept | 0.289 | -1.240 | 0.150 | -8.289 | 0.000 |
| appusage_yes | 1.884 | 0.633 | 0.172 | 3.679 | 0.000 |
| isCompleted_yesterday_yes | 1.523 | 0.420 | 0.111 | 3.787 | 0.000 |
| contact_yes | 0.840 | -0.175 | 0.039 | -4.530 | 0.000 |

Table 6 : Complete Case Analysis: study_day

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 1.029 | 0.028 | 0.067 | 0.426 | 0.672 |
| beta2 | 1.002 | 0.002 | 0.004 | 0.426 | 0.672 |
| Intercept | 0.289 | -1.240 | 0.149 | -8.312 | 0.000 |
| appusage_yes | 1.881 | 0.632 | 0.172 | 3.671 | 0.001 |
| isCompleted_yesterday_yes | 1.524 | 0.421 | 0.112 | 3.772 | 0.000 |
| contact_yes | 0.840 | -0.174 | 0.038 | -4.528 | 0.000 |

Table 7 : Complete Case Analysis: weekend=1 vs. weekend=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 1.008 | 0.008 | 0.045 | 0.188 | 0.851 |
| beta2 | 1.171 | 0.158 | 0.076 | 2.074 | 0.042 |
| contrast: weekday | 1.008 | 0.008 | 0.045 | 0.188 | 0.851 |
| contrast: weekend | 1.181 | 0.166 | 0.073 | 2.269 | 0.027 |
| Intercept | 0.287 | -1.247 | 0.150 | -8.304 | 0.000 |
| appusage_yes | 1.882 | 0.632 | 0.172 | 3.685 | 0.000 |
| isCompleted_yesterday_yes | 1.532 | 0.427 | 0.111 | 3.848 | 0.000 |
| contact_yes | 0.845 | -0.169 | 0.039 | -4.365 | 0.000 |

Table 8 : Complete Case Analysis: Four Moderators in One Model

| | exp | beta_contrast | se.beta_contrast | test.stat.beta_contrast | p.val |
|-------------|-------|---------------|------------------|-------------------------|-------|
| beta1 | 1.286 | 0.251 | 0.181 | 1.389 | 0.170 |
| beta2 | 1.169 | 0.156 | 0.075 | 2.086 | 0.041 |
| beta3 | 1.065 | 0.063 | 0.073 | 0.855 | 0.396 |
| beta4 | 0.796 | -0.228 | 0.155 | -1.470 | 0.147 |
| beta5 | 0.923 | -0.080 | 0.101 | -0.792 | 0.431 |
| (1,1,1,0,0) | 1.600 | 0.470 | 0.191 | 2.460 | 0.017 |
| (1,1,0,0,0) | 1.503 | 0.407 | 0.194 | 2.104 | 0.040 |
| (1,0,1,0,0) | 1.369 | 0.314 | 0.179 | 1.756 | 0.084 |
| (1,1,1,0,1) | 1.477 | 0.390 | 0.161 | 2.417 | 0.019 |
| (1,1,0,0,1) | 1.388 | 0.328 | 0.164 | 2.001 | 0.050 |
| (1,0,1,0,1) | 1.264 | 0.234 | 0.152 | 1.538 | 0.129 |
| (1,1,1,1,0) | 1.274 | 0.242 | 0.135 | 1.787 | 0.079 |
| (1,1,0,1,0) | 1.197 | 0.179 | 0.129 | 1.388 | 0.170 |
| (1,0,1,1,0) | 1.090 | 0.086 | 0.118 | 0.727 | 0.470 |
| (1,1,1,1,1) | 1.176 | 0.162 | 0.084 | 1.942 | 0.057 |
| (1,1,0,1,1) | 1.105 | 0.100 | 0.072 | 1.392 | 0.169 |
| (1,0,1,1,1) | 1.006 | 0.006 | 0.065 | 0.093 | 0.927 |
| (1,0,0,0,0) | 1.286 | 0.251 | 0.181 | 1.389 | 0.170 |
| (1,0,0,0,1) | 1.187 | 0.171 | 0.154 | 1.113 | 0.270 |
| (1,0,0,1,0) | 1.023 | 0.023 | 0.110 | 0.211 | 0.834 |
| (1,0,0,1,1) | 0.945 | -0.057 | 0.047 | -1.215 | 0.229 |

2.2 Analysis with Multiply Imputed Data

Table 1 : Analysis with Multiple Imputed Data: Main Analysis

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta | 1.047 | 0.046 | 0.042 | 1.095 | 0.139 |
| Intercept | 0.317 | -1.148 | 0.144 | -7.978 | 0.000 |
| appusage_yes | 1.610 | 0.476 | 0.177 | 2.693 | 0.009 |
| isCompleted_yesterday_yes | 1.638 | 0.493 | 0.129 | 3.828 | 0.000 |
| contact_yes | 0.834 | -0.182 | 0.039 | -4.646 | 0.000 |

Table 2 : Analysis with Multiple Imputed Data: appusage_yes=1 vs. appusage_yes=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.211 | 0.189 | 0.155 | 1.220 | 0.227 |
| beta2 | 0.848 | -0.167 | 0.158 | -1.053 | 0.296 |
| contrast: appusage_yes=0 | 1.211 | 0.189 | 0.155 | 1.220 | 0.227 |
| contrast: appusage_yes=1 | 1.023 | 0.022 | 0.040 | 0.554 | 0.581 |
| Intercept | 0.297 | -1.216 | 0.177 | -6.884 | 0.000 |
| appusage_yes | 1.808 | 0.591 | 0.232 | 2.547 | 0.013 |
| isCompleted_yesterday_yes | 1.575 | 0.454 | 0.130 | 3.489 | 0.001 |
| contact_yes | 0.835 | -0.180 | 0.039 | -4.628 | 0.000 |

Table 3 : Analysis with Multiple Imputed Data: contact_yes=1 vs. contact_yes=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.016 | 0.016 | 0.046 | 0.339 | 0.736 |
| beta2 | 1.078 | 0.075 | 0.076 | 0.985 | 0.328 |
| contrast: contact_yes=0 | 1.016 | 0.016 | 0.046 | 0.339 | 0.736 |
| contrast: contact_yes=1 | 1.095 | 0.090 | 0.068 | 1.327 | 0.189 |
| Intercept | 0.325 | -1.123 | 0.146 | -7.706 | 0.000 |
| appusage_yes | 1.613 | 0.478 | 0.178 | 2.684 | 0.009 |
| isCompleted_yesterday_yes | 1.616 | 0.480 | 0.129 | 3.717 | 0.000 |
| contact_yes | 0.803 | -0.219 | 0.058 | -3.750 | 0.000 |

Table 4 : Analysis with Multiple Imputed Data: isCompleted_yesterday_yes=1 vs. isCompleted_yesterday_yes=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.133 | 0.125 | 0.116 | 1.078 | 0.285 |
| beta2 | 0.905 | -0.100 | 0.111 | -0.903 | 0.370 |
| contrast: isCompleted_yesterday_yes=0 | 1.133 | 0.125 | 0.116 | 1.078 | 0.285 |
| contrast: isCompleted_yesterday_yes=1 | 1.025 | 0.024 | 0.035 | 0.691 | 0.492 |
| Intercept | 0.309 | -1.175 | 0.147 | -7.987 | 0.000 |
| appusage_yes | 1.557 | 0.443 | 0.176 | 2.509 | 0.015 |
| isCompleted_yesterday_yes | 1.753 | 0.561 | 0.162 | 3.461 | 0.001 |
| contact_yes | 0.840 | -0.175 | 0.039 | -4.505 | 0.000 |

Table 5 : Analysis with Multiple Imputed Data: female=1 vs. female=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.047 | 0.045 | 0.072 | 0.626 | 0.534 |
| beta2 | 1.001 | 0.001 | 0.091 | 0.010 | 0.992 |
| contrast: male | 1.047 | 0.045 | 0.072 | 0.626 | 0.534 |
| contrast: female | 1.047 | 0.046 | 0.052 | 0.896 | 0.374 |
| Intercept | 0.317 | -1.148 | 0.144 | -7.971 | 0.000 |
| appusage_yes | 1.610 | 0.476 | 0.177 | 2.695 | 0.009 |
| isCompleted_yesterday_yes | 1.638 | 0.493 | 0.128 | 3.839 | 0.000 |
| contact_yes | 0.834 | -0.182 | 0.039 | -4.637 | 0.000 |

Table 6 : Analysis with Multiple Imputed Data: study_day

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.028 | 0.027 | 0.067 | 0.410 | 0.684 |
| beta2 | 1.001 | 0.001 | 0.004 | 0.333 | 0.741 |
| Intercept | 0.317 | -1.148 | 0.143 | -8.006 | 0.000 |
| appusage_yes | 1.609 | 0.475 | 0.176 | 2.704 | 0.009 |
| isCompleted_yesterday_yes | 1.639 | 0.494 | 0.129 | 3.839 | 0.000 |
| contact_yes | 0.834 | -0.181 | 0.039 | -4.629 | 0.000 |

Table 7 : Analysis with Multiple Imputed Data: weekend=1 vs. weekend=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.002 | 0.002 | 0.045 | 0.044 | 0.965 |
| beta2 | 1.174 | 0.161 | 0.076 | 2.107 | 0.039 |
| contrast: weekday | 1.002 | 0.002 | 0.045 | 0.044 | 0.965 |
| contrast: weekend | 1.177 | 0.163 | 0.074 | 2.197 | 0.032 |
| Intercept | 0.315 | -1.154 | 0.145 | -7.979 | 0.000 |
| appusage_yes | 1.605 | 0.473 | 0.178 | 2.658 | 0.010 |
| isCompleted_yesterday_yes | 1.651 | 0.502 | 0.129 | 3.874 | 0.000 |
| contact_yes | 0.839 | -0.176 | 0.039 | -4.461 | 0.000 |

Table 8 : Analysis with Multiple Imputed Data: Four Moderators in One Model

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|-------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.157 | 0.142 | 0.185 | 0.769 | 0.445 |
| beta2 | 1.175 | 0.161 | 0.075 | 2.147 | 0.036 |
| beta3 | 1.066 | 0.064 | 0.074 | 0.857 | 0.395 |
| beta4 | 0.877 | -0.133 | 0.153 | -0.872 | 0.387 |
| beta5 | 0.936 | -0.067 | 0.106 | -0.629 | 0.532 |
| (1,1,1,0,0) | 1.449 | 0.368 | 0.199 | 1.847 | 0.070 |
| (1,1,0,0,0) | 1.359 | 0.304 | 0.197 | 1.540 | 0.129 |
| (1,0,1,0,0) | 1.233 | 0.206 | 0.187 | 1.104 | 0.274 |
| (1,1,1,0,1) | 1.354 | 0.301 | 0.162 | 1.854 | 0.069 |
| (1,1,0,0,1) | 1.271 | 0.237 | 0.159 | 1.491 | 0.141 |
| (1,0,1,0,1) | 1.152 | 0.140 | 0.150 | 0.933 | 0.355 |
| (1,1,1,1,0) | 1.265 | 0.235 | 0.136 | 1.727 | 0.089 |
| (1,1,0,1,0) | 1.187 | 0.171 | 0.129 | 1.323 | 0.191 |
| (1,0,1,1,0) | 1.076 | 0.073 | 0.121 | 0.607 | 0.546 |
| (1,1,1,1,1) | 1.183 | 0.168 | 0.086 | 1.954 | 0.055 |
| (1,1,0,1,1) | 1.110 | 0.104 | 0.073 | 1.434 | 0.157 |
| (1,0,1,1,1) | 1.007 | 0.007 | 0.065 | 0.103 | 0.918 |
| (1,0,0,0,0) | 1.157 | 0.142 | 0.185 | 0.769 | 0.445 |
| (1,0,0,0,1) | 1.081 | 0.076 | 0.147 | 0.517 | 0.607 |
| (1,0,0,1,0) | 1.010 | 0.009 | 0.114 | 0.083 | 0.934 |
| (1,0,0,1,1) | 0.945 | -0.057 | 0.048 | -1.187 | 0.240 |

3 Aim 2

3.1 Complete Case Analysis

Table 1 : Complete Case Analysis: Main Analysis

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta | 0.964 | -0.037 | 0.035 | -1.056 | 0.852 |
| Intercept | 0.598 | -0.514 | 0.121 | -4.229 | 0.000 |
| appusage_yes | 1.133 | 0.125 | 0.095 | 1.314 | 0.194 |
| isCompleted_yesterday_yes | 1.277 | 0.245 | 0.065 | 3.770 | 0.000 |
| contact_yes | 0.923 | -0.080 | 0.042 | -1.935 | 0.057 |

Table 2 : Complete Case Analysis: appusage_yes=1 vs. appusage_yes=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 0.940 | -0.062 | 0.144 | -0.430 | 0.669 |
| beta2 | 1.030 | 0.029 | 0.150 | 0.196 | 0.845 |
| contrast: appusage_yes=0 | 0.940 | -0.062 | 0.144 | -0.430 | 0.669 |
| contrast: appusage_yes=1 | 0.968 | -0.032 | 0.039 | -0.831 | 0.409 |
| Intercept | 0.604 | -0.503 | 0.154 | -3.262 | 0.002 |
| appusage_yes | 1.098 | 0.093 | 0.140 | 0.666 | 0.508 |
| isCompleted_yesterday_yes | 1.292 | 0.256 | 0.073 | 3.504 | 0.001 |
| contact_yes | 0.924 | -0.080 | 0.046 | -1.736 | 0.088 |

Table 3 : Complete Case Analysis: contact_yes=1 vs. contact_yes=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 0.973 | -0.028 | 0.049 | -0.562 | 0.576 |
| beta2 | 0.980 | -0.020 | 0.081 | -0.245 | 0.807 |
| contrast: contact_yes=0 | 0.973 | -0.028 | 0.049 | -0.562 | 0.576 |
| contrast: contact_yes=1 | 0.954 | -0.048 | 0.062 | -0.769 | 0.445 |
| Intercept | 0.595 | -0.520 | 0.124 | -4.195 | 0.000 |
| appusage_yes | 1.114 | 0.108 | 0.093 | 1.166 | 0.248 |
| isCompleted_yesterday_yes | 1.290 | 0.255 | 0.071 | 3.585 | 0.001 |
| contact_yes | 0.932 | -0.070 | 0.053 | -1.322 | 0.191 |

Table 4 : Complete Case Analysis: isCompleted_yesterday_yes=1 vs. isCompleted_yesterday_yes=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------------------|-------|--------|---------|-----------|-------|
| beta1 | 0.745 | -0.294 | 0.130 | -2.258 | 0.027 |
| beta2 | 1.359 | 0.307 | 0.131 | 2.338 | 0.023 |
| contrast: isCompleted_yesterday_yes=0 | 0.745 | -0.294 | 0.130 | -2.258 | 0.027 |
| contrast: isCompleted_yesterday_yes=1 | 1.013 | 0.012 | 0.035 | 0.353 | 0.725 |
| Intercept | 0.652 | -0.428 | 0.137 | -3.121 | 0.003 |
| appusage_yes | 1.150 | 0.140 | 0.104 | 1.338 | 0.186 |
| isCompleted_yesterday_yes | 1.122 | 0.115 | 0.085 | 1.353 | 0.181 |
| contact_yes | 0.920 | -0.083 | 0.046 | -1.800 | 0.077 |

Table 5 : Complete Case Analysis: female=1 vs. female=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 1.036 | 0.036 | 0.057 | 0.623 | 0.536 |
| beta2 | 0.883 | -0.124 | 0.079 | -1.567 | 0.122 |
| contrast: male | 1.036 | 0.036 | 0.057 | 0.623 | 0.536 |
| contrast: female | 0.915 | -0.088 | 0.052 | -1.696 | 0.095 |
| Intercept | 0.593 | -0.523 | 0.119 | -4.390 | 0.000 |
| appusage_yes | 1.116 | 0.110 | 0.084 | 1.304 | 0.197 |
| isCompleted_yesterday_yes | 1.301 | 0.263 | 0.073 | 3.589 | 0.001 |
| contact_yes | 0.920 | -0.083 | 0.045 | -1.849 | 0.069 |

Table 6 : Complete Case Analysis: study_day

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 0.969 | -0.032 | 0.075 | -0.427 | 0.671 |
| beta2 | 1.000 | 0.000 | 0.005 | -0.050 | 0.960 |
| Intercept | 0.598 | -0.515 | 0.127 | -4.061 | 0.000 |
| appusage_yes | 1.114 | 0.108 | 0.093 | 1.163 | 0.249 |
| isCompleted_yesterday_yes | 1.289 | 0.254 | 0.075 | 3.379 | 0.001 |
| contact_yes | 0.923 | -0.080 | 0.047 | -1.703 | 0.094 |

Table 7 : Complete Case Analysis: weekend=1 vs. weekend=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 0.968 | -0.032 | 0.049 | -0.658 | 0.513 |
| beta2 | 0.990 | -0.010 | 0.087 | -0.117 | 0.907 |
| contrast: weekday | 0.968 | -0.032 | 0.049 | -0.658 | 0.513 |
| contrast: weekend | 0.958 | -0.043 | 0.064 | -0.666 | 0.508 |
| Intercept | 0.598 | -0.515 | 0.126 | -4.078 | 0.000 |
| appusage_yes | 1.114 | 0.108 | 0.092 | 1.175 | 0.245 |
| isCompleted_yesterday_yes | 1.288 | 0.253 | 0.073 | 3.448 | 0.001 |
| contact_yes | 0.923 | -0.080 | 0.045 | -1.762 | 0.083 |

Table 8 : Complete Case Analysis: Four Moderators in One Model

| | exp | beta_contrast | se.beta_contrast | test.stat.beta_contrast | p.val |
|-------------|-------|---------------|------------------|-------------------------|-------|
| beta1 | 0.700 | -0.357 | 0.234 | -1.524 | 0.135 |
| beta2 | 1.014 | 0.014 | 0.097 | 0.144 | 0.886 |
| beta3 | 1.007 | 0.007 | 0.083 | 0.080 | 0.936 |
| beta4 | 1.058 | 0.057 | 0.158 | 0.357 | 0.723 |
| beta5 | 1.368 | 0.313 | 0.142 | 2.199 | 0.034 |
| (1,1,1,0,0) | 0.714 | -0.337 | 0.224 | -1.505 | 0.140 |
| (1,1,0,0,0) | 0.709 | -0.343 | 0.219 | -1.566 | 0.125 |
| (1,0,1,0,0) | 0.704 | -0.351 | 0.235 | -1.490 | 0.144 |
| (1,1,1,0,1) | 0.977 | -0.024 | 0.182 | -0.130 | 0.897 |
| (1,1,0,0,1) | 0.970 | -0.030 | 0.167 | -0.182 | 0.857 |
| (1,0,1,0,1) | 0.963 | -0.038 | 0.158 | -0.239 | 0.813 |
| (1,1,1,1,0) | 0.756 | -0.280 | 0.120 | -2.337 | 0.024 |
| (1,1,0,1,0) | 0.751 | -0.287 | 0.123 | -2.324 | 0.025 |
| (1,0,1,1,0) | 0.745 | -0.294 | 0.154 | -1.912 | 0.063 |
| (1,1,1,1,1) | 1.033 | 0.033 | 0.095 | 0.345 | 0.731 |
| (1,1,0,1,1) | 1.027 | 0.026 | 0.081 | 0.322 | 0.749 |
| (1,0,1,1,1) | 1.019 | 0.019 | 0.068 | 0.279 | 0.782 |
| (1,0,0,0,0) | 0.700 | -0.357 | 0.234 | -1.524 | 0.135 |
| (1,0,0,0,1) | 0.957 | -0.044 | 0.145 | -0.305 | 0.762 |
| (1,0,0,1,0) | 0.740 | -0.301 | 0.161 | -1.864 | 0.069 |
| (1,0,0,1,1) | 1.012 | 0.012 | 0.061 | 0.203 | 0.840 |

3.2 Analysis with Multiply Imputed Data

Table 1 : Analysis with Multiple Imputed Data: Main Analysis

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta | 0.966 | -0.035 | 0.034 | -1.017 | 0.843 |
| Intercept | 0.614 | -0.488 | 0.110 | -4.414 | 0.000 |
| appusage_yes | 1.105 | 0.100 | 0.081 | 1.234 | 0.222 |
| isCompleted_yesterday_yes | 1.273 | 0.242 | 0.065 | 3.715 | 0.000 |
| contact_yes | 0.930 | -0.073 | 0.040 | -1.833 | 0.071 |

Table 2 : Analysis with Multiple Imputed Data: appusage_yes=1 vs. appusage_yes=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.944 | -0.058 | 0.132 | -0.441 | 0.661 |
| beta2 | 1.028 | 0.027 | 0.138 | 0.199 | 0.843 |
| contrast: appusage_yes=0 | 0.944 | -0.058 | 0.132 | -0.441 | 0.661 |
| contrast: appusage_yes=1 | 0.970 | -0.031 | 0.039 | -0.789 | 0.433 |
| Intercept | 0.619 | -0.479 | 0.136 | -3.530 | 0.001 |
| appusage_yes | 1.073 | 0.070 | 0.118 | 0.595 | 0.554 |
| isCompleted_yesterday_yes | 1.287 | 0.252 | 0.073 | 3.439 | 0.001 |
| contact_yes | 0.932 | -0.071 | 0.043 | -1.629 | 0.108 |

Table 3 : Analysis with Multiple Imputed Data: contact_yes=1 vs. contact_yes=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.973 | -0.027 | 0.049 | -0.557 | 0.580 |
| beta2 | 0.985 | -0.016 | 0.079 | -0.196 | 0.845 |
| contrast: contact_yes=0 | 0.973 | -0.027 | 0.049 | -0.557 | 0.580 |
| contrast: contact_yes=1 | 0.958 | -0.043 | 0.060 | -0.711 | 0.480 |
| Intercept | 0.611 | -0.493 | 0.114 | -4.336 | 0.000 |
| appusage_yes | 1.088 | 0.084 | 0.079 | 1.059 | 0.294 |
| isCompleted_yesterday_yes | 1.285 | 0.251 | 0.071 | 3.518 | 0.001 |
| contact_yes | 0.939 | -0.063 | 0.051 | -1.237 | 0.221 |

Table 4 : Analysis with Multiple Imputed Data: isCompleted_yesterday_yes=1 vs. isCompleted_yesterday_yes=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.755 | -0.281 | 0.126 | -2.229 | 0.029 |
| beta2 | 1.341 | 0.293 | 0.127 | 2.301 | 0.025 |
| contrast: isCompleted_yesterday_yes=0 | 0.755 | -0.281 | 0.126 | -2.229 | 0.029 |
| contrast: isCompleted_yesterday_yes=1 | 1.012 | 0.012 | 0.035 | 0.351 | 0.727 |
| Intercept | 0.667 | -0.405 | 0.124 | -3.265 | 0.002 |
| appusage_yes | 1.120 | 0.113 | 0.090 | 1.251 | 0.216 |
| isCompleted_yesterday_yes | 1.124 | 0.117 | 0.085 | 1.385 | 0.171 |
| contact_yes | 0.929 | -0.074 | 0.044 | -1.667 | 0.101 |

Table 5 : Analysis with Multiple Imputed Data: female=1 vs. female=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.034 | 0.034 | 0.056 | 0.600 | 0.551 |
| beta2 | 0.890 | -0.116 | 0.078 | -1.489 | 0.142 |
| contrast: male | 1.034 | 0.034 | 0.056 | 0.600 | 0.551 |
| contrast: female | 0.921 | -0.083 | 0.052 | -1.590 | 0.117 |
| Intercept | 0.610 | -0.495 | 0.110 | -4.490 | 0.000 |
| appusage_yes | 1.088 | 0.084 | 0.073 | 1.157 | 0.252 |
| isCompleted_yesterday_yes | 1.294 | 0.258 | 0.073 | 3.515 | 0.001 |
| contact_yes | 0.929 | -0.074 | 0.043 | -1.727 | 0.089 |

Table 6 : Analysis with Multiple Imputed Data: study_day

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.975 | -0.026 | 0.072 | -0.358 | 0.722 |
| beta2 | 0.999 | -0.001 | 0.005 | -0.119 | 0.906 |
| Intercept | 0.613 | -0.489 | 0.117 | -4.187 | 0.000 |
| appusage_yes | 1.088 | 0.084 | 0.080 | 1.056 | 0.295 |
| isCompleted_yesterday_yes | 1.283 | 0.249 | 0.075 | 3.317 | 0.002 |
| contact_yes | 0.931 | -0.071 | 0.045 | -1.596 | 0.116 |

Table 7 : Analysis with Multiple Imputed Data: weekend=1 vs. weekend=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.970 | -0.030 | 0.048 | -0.624 | 0.535 |
| beta2 | 0.988 | -0.012 | 0.086 | -0.136 | 0.892 |
| contrast: weekday | 0.970 | -0.030 | 0.048 | -0.624 | 0.535 |
| contrast: weekend | 0.959 | -0.042 | 0.065 | -0.644 | 0.522 |
| Intercept | 0.613 | -0.489 | 0.116 | -4.215 | 0.000 |
| appusage_yes | 1.088 | 0.084 | 0.079 | 1.068 | 0.289 |
| isCompleted_yesterday_yes | 1.283 | 0.249 | 0.073 | 3.397 | 0.001 |
| contact_yes | 0.931 | -0.071 | 0.043 | -1.653 | 0.103 |

Table 8 : Analysis with Multiple Imputed Data: Four Moderators in One Model

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|-------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.711 | -0.341 | 0.225 | -1.519 | 0.134 |
| beta2 | 1.013 | 0.013 | 0.096 | 0.136 | 0.892 |
| beta3 | 1.011 | 0.011 | 0.081 | 0.133 | 0.895 |
| beta4 | 1.054 | 0.052 | 0.147 | 0.356 | 0.723 |
| beta5 | 1.350 | 0.300 | 0.139 | 2.162 | 0.035 |
| (1,1,1,0,0) | 0.728 | -0.318 | 0.207 | -1.536 | 0.130 |
| (1,1,0,0,0) | 0.720 | -0.328 | 0.207 | -1.584 | 0.119 |
| (1,0,1,0,0) | 0.719 | -0.331 | 0.221 | -1.499 | 0.139 |
| (1,1,1,0,1) | 0.983 | -0.018 | 0.168 | -0.106 | 0.916 |
| (1,1,0,0,1) | 0.972 | -0.028 | 0.156 | -0.182 | 0.856 |
| (1,0,1,0,1) | 0.970 | -0.031 | 0.145 | -0.212 | 0.833 |
| (1,1,1,1,0) | 0.767 | -0.265 | 0.116 | -2.297 | 0.025 |
| (1,1,0,1,0) | 0.759 | -0.276 | 0.122 | -2.266 | 0.027 |
| (1,0,1,1,0) | 0.757 | -0.278 | 0.148 | -1.887 | 0.064 |
| (1,1,1,1,1) | 1.035 | 0.034 | 0.096 | 0.359 | 0.721 |
| (1,1,0,1,1) | 1.024 | 0.024 | 0.081 | 0.291 | 0.772 |
| (1,0,1,1,1) | 1.022 | 0.021 | 0.067 | 0.320 | 0.750 |
| (1,0,0,0,0) | 0.711 | -0.341 | 0.225 | -1.519 | 0.134 |
| (1,0,0,0,1) | 0.960 | -0.041 | 0.137 | -0.303 | 0.763 |
| (1,0,0,1,0) | 0.749 | -0.289 | 0.158 | -1.833 | 0.072 |
| (1,0,0,1,1) | 1.011 | 0.011 | 0.059 | 0.180 | 0.858 |

4 Aim 4

4.1 Complete Case Analysis

Table 1 : Complete Case Analysis: Main Analysis

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta | 0.984 | -0.016 | 0.040 | -0.399 | 0.654 |
| Intercept | 0.672 | -0.397 | 0.124 | -3.204 | 0.002 |
| appusage_yes | 1.013 | 0.013 | 0.082 | 0.155 | 0.877 |
| isCompleted_yesterday_yes | 1.249 | 0.223 | 0.078 | 2.871 | 0.006 |
| contact_yes | 0.912 | -0.092 | 0.047 | -1.963 | 0.054 |

Table 2 : Complete Case Analysis: appusage_yes=1 vs. appusage_yes=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 0.870 | -0.139 | 0.131 | -1.062 | 0.292 |
| beta2 | 1.128 | 0.121 | 0.136 | 0.890 | 0.377 |
| contrast: appusage_yes=0 | 0.870 | -0.139 | 0.131 | -1.062 | 0.292 |
| contrast: appusage_yes=1 | 0.982 | -0.018 | 0.044 | -0.415 | 0.680 |
| Intercept | 0.718 | -0.332 | 0.156 | -2.125 | 0.038 |
| appusage_yes | 0.932 | -0.070 | 0.116 | -0.608 | 0.546 |
| isCompleted_yesterday_yes | 1.259 | 0.231 | 0.089 | 2.580 | 0.012 |
| contact_yes | 0.910 | -0.094 | 0.053 | -1.783 | 0.079 |

Table 3 : Complete Case Analysis: contact_yes=1 vs. contact_yes=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 0.908 | -0.097 | 0.048 | -2.007 | 0.049 |
| beta2 | 1.216 | 0.196 | 0.092 | 2.137 | 0.037 |
| contrast: contact_yes=0 | 0.908 | -0.097 | 0.048 | -2.007 | 0.049 |
| contrast: contact_yes=1 | 1.104 | 0.099 | 0.079 | 1.257 | 0.213 |
| Intercept | 0.707 | -0.347 | 0.126 | -2.751 | 0.008 |
| appusage_yes | 0.987 | -0.013 | 0.073 | -0.183 | 0.856 |
| isCompleted_yesterday_yes | 1.250 | 0.224 | 0.088 | 2.545 | 0.013 |
| contact_yes | 0.826 | -0.191 | 0.072 | -2.665 | 0.010 |

Table 4 : Complete Case Analysis: isCompleted_yesterday_yes=1 vs. isCompleted_yesterday_yes=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------------------|-------|--------|---------|-----------|-------|
| beta1 | 1.360 | 0.308 | 0.125 | 2.459 | 0.017 |
| beta2 | 0.669 | -0.402 | 0.135 | -2.978 | 0.004 |
| contrast: isCompleted_yesterday_yes=0 | 1.360 | 0.308 | 0.125 | 2.459 | 0.017 |
| contrast: isCompleted_yesterday_yes=1 | 0.910 | -0.095 | 0.046 | -2.048 | 0.045 |
| Intercept | 0.567 | -0.568 | 0.152 | -3.737 | 0.000 |
| appusage_yes | 0.976 | -0.024 | 0.064 | -0.376 | 0.708 |
| isCompleted_yesterday_yes | 1.571 | 0.452 | 0.132 | 3.423 | 0.001 |
| contact_yes | 0.918 | -0.086 | 0.052 | -1.656 | 0.103 |

Table 5 : Complete Case Analysis: female=1 vs. female=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 0.953 | -0.048 | 0.060 | -0.814 | 0.419 |
| beta2 | 1.033 | 0.032 | 0.088 | 0.366 | 0.716 |
| contrast: male | 0.953 | -0.048 | 0.060 | -0.814 | 0.419 |
| contrast: female | 0.984 | -0.016 | 0.062 | -0.263 | 0.793 |
| Intercept | 0.681 | -0.384 | 0.132 | -2.913 | 0.005 |
| appusage_yes | 0.989 | -0.011 | 0.079 | -0.135 | 0.893 |
| isCompleted_yesterday_yes | 1.255 | 0.227 | 0.088 | 2.585 | 0.012 |
| contact_yes | 0.913 | -0.091 | 0.054 | -1.704 | 0.093 |

Table 6 : Complete Case Analysis: study_day

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 0.960 | -0.041 | 0.073 | -0.552 | 0.583 |
| beta2 | 1.001 | 0.001 | 0.005 | 0.150 | 0.881 |
| Intercept | 0.680 | -0.386 | 0.131 | -2.946 | 0.005 |
| appusage_yes | 0.991 | -0.009 | 0.078 | -0.111 | 0.912 |
| isCompleted_yesterday_yes | 1.257 | 0.229 | 0.088 | 2.595 | 0.012 |
| contact_yes | 0.910 | -0.094 | 0.053 | -1.785 | 0.079 |

Table 7 : Complete Case Analysis: weekend=1 vs. weekend=0

| | exp | beta | se.beta | test.stat | p.val |
|---------------------------|-------|--------|---------|-----------|-------|
| beta1 | 1.006 | 0.006 | 0.054 | 0.103 | 0.918 |
| beta2 | 0.881 | -0.126 | 0.098 | -1.284 | 0.204 |
| contrast: weekday | 1.006 | 0.006 | 0.054 | 0.103 | 0.918 |
| contrast: weekend | 0.886 | -0.121 | 0.077 | -1.563 | 0.123 |
| Intercept | 0.687 | -0.376 | 0.132 | -2.848 | 0.006 |
| appusage_yes | 0.994 | -0.006 | 0.081 | -0.076 | 0.940 |
| isCompleted_yesterday_yes | 1.240 | 0.215 | 0.089 | 2.411 | 0.019 |
| contact_yes | 0.907 | -0.098 | 0.053 | -1.835 | 0.071 |

Table 8 : Complete Case Analysis: Four Moderators in One Model

| | exp | beta_contrast | se.beta_contrast | test.stat.beta_contrast | p.val |
|-------------|-------|---------------|------------------|-------------------------|-------|
| beta1 | 1.201 | 0.183 | 0.158 | 1.155 | 0.255 |
| beta2 | 0.853 | -0.159 | 0.092 | -1.735 | 0.090 |
| beta3 | 1.167 | 0.155 | 0.092 | 1.688 | 0.099 |
| beta4 | 1.141 | 0.132 | 0.138 | 0.954 | 0.346 |
| beta5 | 0.667 | -0.405 | 0.130 | -3.118 | 0.003 |
| (1,1,1,0,0) | 1.196 | 0.179 | 0.186 | 0.963 | 0.341 |
| (1,1,0,0,0) | 1.025 | 0.024 | 0.176 | 0.138 | 0.891 |
| (1,0,1,0,0) | 1.402 | 0.338 | 0.172 | 1.962 | 0.057 |
| (1,1,1,0,1) | 0.798 | -0.226 | 0.164 | -1.378 | 0.176 |
| (1,1,0,0,1) | 0.683 | -0.381 | 0.148 | -2.577 | 0.014 |
| (1,0,1,0,1) | 0.935 | -0.067 | 0.162 | -0.416 | 0.680 |
| (1,1,1,1,0) | 1.365 | 0.311 | 0.157 | 1.974 | 0.055 |
| (1,1,0,1,0) | 1.169 | 0.156 | 0.155 | 1.009 | 0.319 |
| (1,0,1,1,0) | 1.599 | 0.470 | 0.135 | 3.490 | 0.001 |
| (1,1,1,1,1) | 0.910 | -0.094 | 0.098 | -0.966 | 0.340 |
| (1,1,0,1,1) | 0.779 | -0.249 | 0.085 | -2.940 | 0.005 |
| (1,0,1,1,1) | 1.067 | 0.064 | 0.084 | 0.764 | 0.449 |
| (1,0,0,0,0) | 1.201 | 0.183 | 0.158 | 1.155 | 0.255 |
| (1,0,0,0,1) | 0.801 | -0.222 | 0.142 | -1.560 | 0.127 |
| (1,0,0,1,0) | 1.370 | 0.315 | 0.128 | 2.469 | 0.018 |
| (1,0,0,1,1) | 0.914 | -0.090 | 0.062 | -1.464 | 0.151 |

4.2 Analysis with Multiply Imputed Data

Table 1 : Analysis with Multiple Imputed Data: Main Analysis

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta | 0.984 | -0.016 | 0.039 | -0.420 | 0.662 |
| Intercept | 0.672 | -0.397 | 0.094 | -4.208 | 0.000 |
| appusage_yes | 0.995 | -0.005 | 0.055 | -0.098 | 0.922 |
| isCompleted_yesterday_yes | 1.275 | 0.243 | 0.074 | 3.291 | 0.002 |
| contact_yes | 0.914 | -0.090 | 0.046 | -1.939 | 0.057 |

Table 2 : Analysis with Multiple Imputed Data: appusage_yes=1 vs. appusage_yes=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.918 | -0.087 | 0.109 | -0.793 | 0.431 |
| beta2 | 1.072 | 0.068 | 0.115 | 0.595 | 0.554 |
| contrast: appusage_yes=0 | 0.918 | -0.087 | 0.109 | -0.793 | 0.431 |
| contrast: appusage_yes=1 | 0.982 | -0.018 | 0.044 | -0.417 | 0.678 |
| Intercept | 0.712 | -0.339 | 0.117 | -2.891 | 0.005 |
| appusage_yes | 0.933 | -0.070 | 0.085 | -0.825 | 0.413 |
| isCompleted_yesterday_yes | 1.271 | 0.240 | 0.083 | 2.870 | 0.006 |
| contact_yes | 0.909 | -0.095 | 0.053 | -1.806 | 0.076 |

Table 3 : Analysis with Multiple Imputed Data: contact_yes=1 vs. contact_yes=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.915 | -0.089 | 0.048 | -1.854 | 0.069 |
| beta2 | 1.204 | 0.186 | 0.091 | 2.037 | 0.046 |
| contrast: contact_yes=0 | 0.915 | -0.089 | 0.048 | -1.854 | 0.069 |
| contrast: contact_yes=1 | 1.102 | 0.097 | 0.078 | 1.247 | 0.217 |
| Intercept | 0.718 | -0.331 | 0.098 | -3.366 | 0.001 |
| appusage_yes | 0.960 | -0.041 | 0.050 | -0.810 | 0.421 |
| isCompleted_yesterday_yes | 1.263 | 0.234 | 0.082 | 2.854 | 0.006 |
| contact_yes | 0.830 | -0.186 | 0.072 | -2.604 | 0.012 |

Table 4 : Analysis with Multiple Imputed Data: isCompleted_yesterday_yes=1 vs. isCompleted_yesterday_yes=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.318 | 0.275 | 0.125 | 2.204 | 0.031 |
| beta2 | 0.696 | -0.363 | 0.134 | -2.708 | 0.009 |
| contrast: isCompleted_yesterday_yes=0 | 1.318 | 0.275 | 0.125 | 2.204 | 0.031 |
| contrast: isCompleted_yesterday_yes=1 | 0.917 | -0.087 | 0.044 | -1.962 | 0.054 |
| Intercept | 0.591 | -0.526 | 0.129 | -4.064 | 0.000 |
| appusage_yes | 0.950 | -0.051 | 0.050 | -1.024 | 0.310 |
| isCompleted_yesterday_yes | 1.546 | 0.436 | 0.124 | 3.500 | 0.001 |
| contact_yes | 0.916 | -0.088 | 0.051 | -1.716 | 0.091 |

Table 5 : Analysis with Multiple Imputed Data: female=1 vs. female=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.957 | -0.044 | 0.061 | -0.730 | 0.468 |
| beta2 | 1.029 | 0.028 | 0.087 | 0.324 | 0.747 |
| contrast: male | 0.957 | -0.044 | 0.061 | -0.730 | 0.468 |
| contrast: female | 0.984 | -0.016 | 0.060 | -0.270 | 0.788 |
| Intercept | 0.694 | -0.365 | 0.102 | -3.585 | 0.001 |
| appusage_yes | 0.964 | -0.037 | 0.054 | -0.688 | 0.494 |
| isCompleted_yesterday_yes | 1.266 | 0.236 | 0.082 | 2.862 | 0.006 |
| contact_yes | 0.912 | -0.093 | 0.053 | -1.741 | 0.087 |

Table 6 : Analysis with Multiple Imputed Data: study_day

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 0.963 | -0.037 | 0.074 | -0.507 | 0.614 |
| beta2 | 1.001 | 0.001 | 0.005 | 0.135 | 0.893 |
| Intercept | 0.693 | -0.366 | 0.101 | -3.617 | 0.001 |
| appusage_yes | 0.965 | -0.036 | 0.053 | -0.672 | 0.504 |
| isCompleted_yesterday_yes | 1.267 | 0.237 | 0.083 | 2.869 | 0.006 |
| contact_yes | 0.909 | -0.095 | 0.053 | -1.809 | 0.075 |

Table 7 : Analysis with Multiple Imputed Data: weekend=1 vs. weekend=0

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|---------------------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.005 | 0.005 | 0.052 | 0.103 | 0.918 |
| beta2 | 0.887 | -0.120 | 0.095 | -1.273 | 0.208 |
| contrast: weekday | 1.005 | 0.005 | 0.052 | 0.103 | 0.918 |
| contrast: weekend | 0.891 | -0.115 | 0.075 | -1.535 | 0.130 |
| Intercept | 0.698 | -0.359 | 0.101 | -3.543 | 0.001 |
| appusage_yes | 0.969 | -0.031 | 0.055 | -0.575 | 0.567 |
| isCompleted_yesterday_yes | 1.253 | 0.225 | 0.084 | 2.687 | 0.009 |
| contact_yes | 0.907 | -0.098 | 0.053 | -1.850 | 0.069 |

Table 8 : Analysis with Multiple Imputed Data: Four Moderators in One Model

| | pooled.exp.beta | pooled.beta | pooled.se.beta | test.stat | p.val |
|-------------|-----------------|-------------|----------------|-----------|-------|
| beta1 | 1.250 | 0.220 | 0.163 | 1.346 | 0.183 |
| beta2 | 0.861 | -0.150 | 0.088 | -1.703 | 0.094 |
| beta3 | 1.158 | 0.147 | 0.092 | 1.601 | 0.115 |
| beta4 | 1.063 | 0.060 | 0.116 | 0.516 | 0.608 |
| beta5 | 0.695 | -0.364 | 0.130 | -2.800 | 0.007 |
| (1,1,1,0,0) | 1.244 | 0.217 | 0.185 | 1.170 | 0.247 |
| (1,1,0,0,0) | 1.075 | 0.070 | 0.177 | 0.394 | 0.695 |
| (1,0,1,0,0) | 1.447 | 0.367 | 0.174 | 2.103 | 0.040 |
| (1,1,1,0,1) | 0.863 | -0.148 | 0.143 | -1.037 | 0.304 |
| (1,1,0,0,1) | 0.745 | -0.295 | 0.123 | -2.395 | 0.020 |
| (1,0,1,0,1) | 1.003 | 0.002 | 0.140 | 0.018 | 0.986 |
| (1,1,1,1,0) | 1.318 | 0.276 | 0.153 | 1.810 | 0.075 |
| (1,1,0,1,0) | 1.138 | 0.129 | 0.151 | 0.857 | 0.395 |
| (1,0,1,1,0) | 1.532 | 0.427 | 0.132 | 3.224 | 0.002 |
| (1,1,1,1,1) | 0.916 | -0.088 | 0.098 | -0.896 | 0.374 |
| (1,1,0,1,1) | 0.791 | -0.235 | 0.084 | -2.809 | 0.007 |
| (1,0,1,1,1) | 1.064 | 0.062 | 0.084 | 0.742 | 0.461 |
| (1,0,0,0,0) | 1.250 | 0.220 | 0.163 | 1.346 | 0.183 |
| (1,0,0,0,1) | 0.866 | -0.145 | 0.117 | -1.231 | 0.223 |
| (1,0,0,1,0) | 1.323 | 0.279 | 0.127 | 2.192 | 0.032 |
| (1,0,0,1,1) | 0.919 | -0.085 | 0.061 | -1.394 | 0.169 |

5 References

1. Little RJA, Rubin DB. Statistical Analysis with Missing Data. J Wiley & Sons: New York, NY, USA, 1987.