Random Acts of Kindness in a Pandemic

W241 Final Project
Spring 2020

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Research Questions

Does engaging in random acts of kindness improve your mental health? If so, how?

- Does THINKING about being kind impact mental health to the same degree as actually DOING kind things?
- Is the impact of being kind on mental health affected by who the primary beneficiary is -- YOURSELF or SOMEONE ELSE?
- Does the amount of emotional reward -- HIGH OR LOW -- that one gets from performing a kind action influence how much it impacts your mental health?

Predictions: For mood change, DOING > THINKING, OTHER > SELF, HIGH > LOW

Research Plan(s)

Pre COVID-19

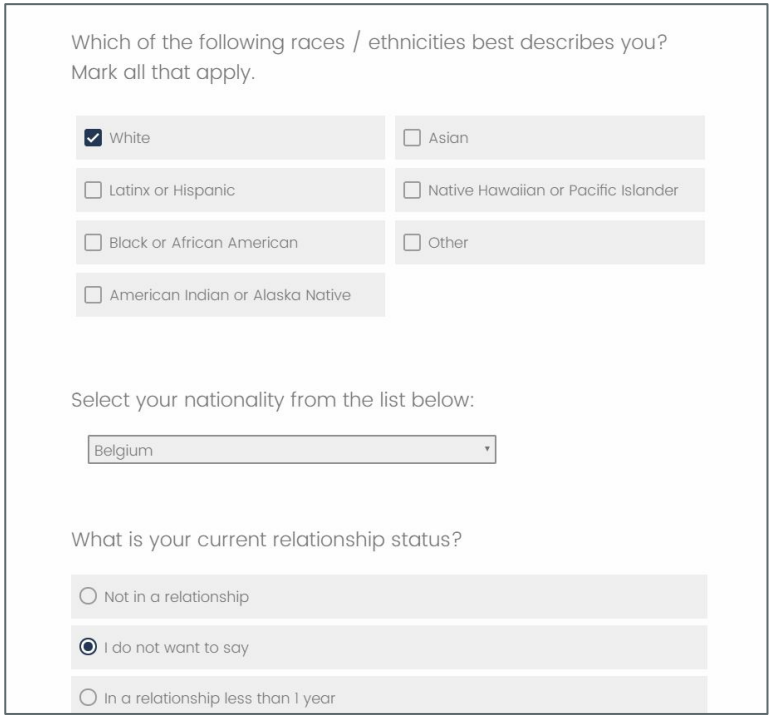
- Strangers ⇔ Familiars ⇔ Self
- Various social settings
- Mood + Satisfaction
- $500 of kindness funding
- $N = 40$

Shelter-in-Place

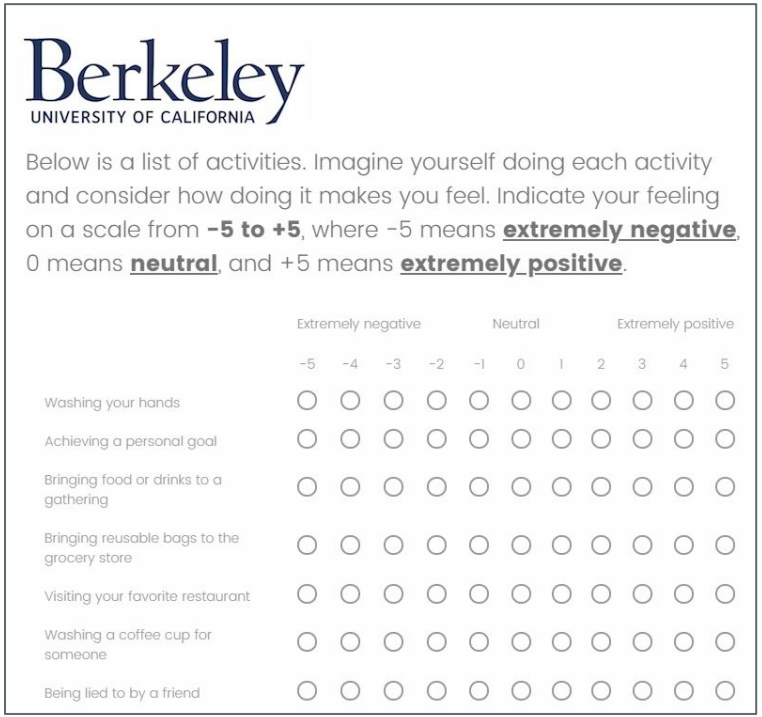
- Familiars ⇔ Self
- At home or online
- Mood change
- $500 in gift cards/donations
- $N_{\text{pre-exp}} = 51$, $N_{\text{exp}} = 73$

Pre-Experiment Task Survey

Demographic Questions



Task Ratings



Task Selection

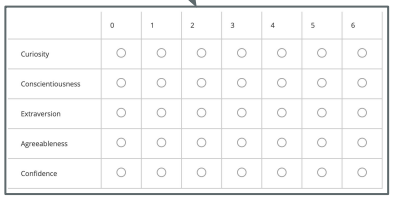
Focus	Target	Intensity	Code	Set1	Set2
Mind	Self	Low	MSL	Think about making your bed	Think about making yourself something to drink
Kind	Self	Low	KSL	Make yourself something to drink	Make your bed
Mind	Self	High	MSH	Think about writing down about three steps you took to achieve a personal goal	Think about listening to an encouraging song
Kind	Self	High	KSH	Listen to an encouraging song	Write down three steps you took to achieve a personal goal
Mind	Other	Low	MOL	Think about cleaning something up for someone	Think about washing a cup or dish for someone
Kind	Other	Low	KOL	Wash a cup or dish for someone	Clean something up for someone
Mind	Other	High	MOH	Think about catching up with a friend	Think about recommending a book to a friend
Kind	Other	High	KOH	Recommend a book to a friend	Catch up with a friend

Group 1a Group 1b Group 2a Group 2b

Subject Workflow

Initial Survey

- Demographic characteristics
- Personality Traits



1

Practice Task

"Wash your hands"

- The texture, scent, and feel of the soap
- The temperature and sound of the water
- The sensation of the towel as you dry your hands

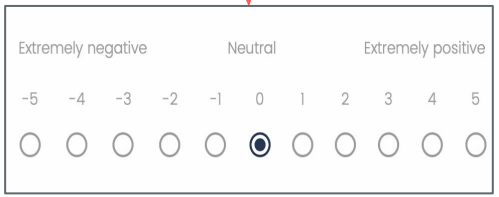
2

Daily Task

- Report mood before
- Perform task
- Report mood after

3

x 8

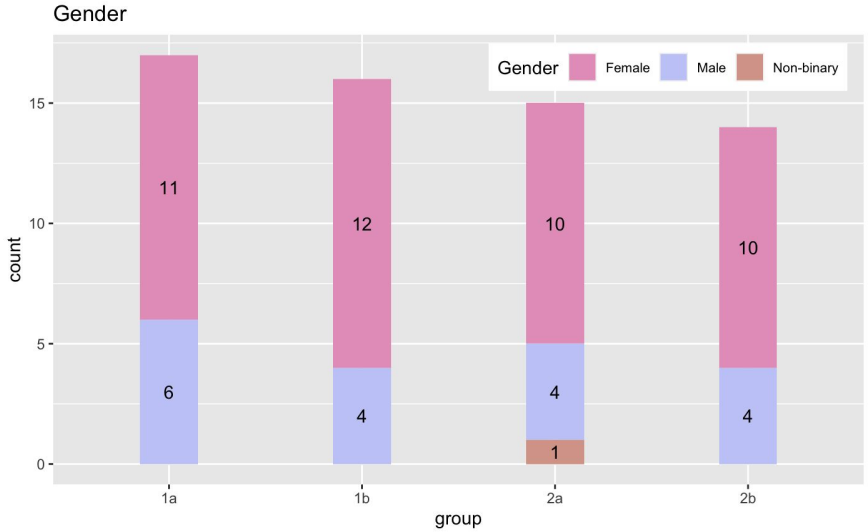


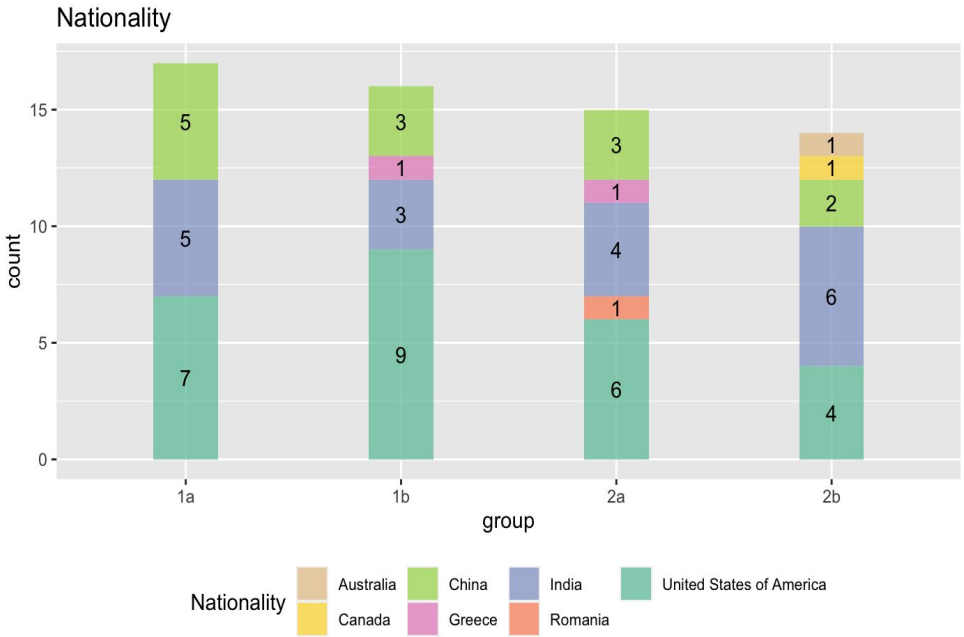
EDA - Task Survey vs. Experiment Groups

Variable	*df*	Test	Value	Group w/ Higher Score or Avg.	
Gender	2	χ^2	7.8564*	Pre-Exp: Male; Exp: Female	😟
Generation	3	χ^2	12.198**	Pre-Exp: Millennial; Exp: GenX, Millennial	😟😟
Race/Ethnicity	5	χ^2	2.2373	Asian, White	
Nationality	12	χ^2	17.450	Pre-Exp: China; Exp: U.S.	
Relationship Status	3	χ^2	5.1728	> 1 year, No relationship	
Residential Area	2	χ^2	17.102***	Pre-Exp: Urban; Exp: Suburban	😟😟😟
Family of Origin	99.902	*t*	-1.7853·	Experiment	
Current Household	71.919	*t*	-1.8773·	Experiment	
Languages Spoken	90.123	*t*	-0.44549·	Experiment	
Curiosity	67.93	*t*	10.932***	Pre-Exp Survey	😟😟😟
Conscientiousness	55.183	*t*	7.5474***	Pre-Exp Survey	😟😟😟
Extraversion	57.362	*t*	6.2196***	Pre-Exp Survey	😟😟😟
Agreeable	62.875	*t*	7.1863***	Pre-Exp Survey	😟😟😟
Confident	65.723	*t*	8.9174***	Pre-Exp Survey	😟😟😟

***$p < .001$, **$p < .01$, $p < .05$, ·$p < .10$

EDA - Blocking Results





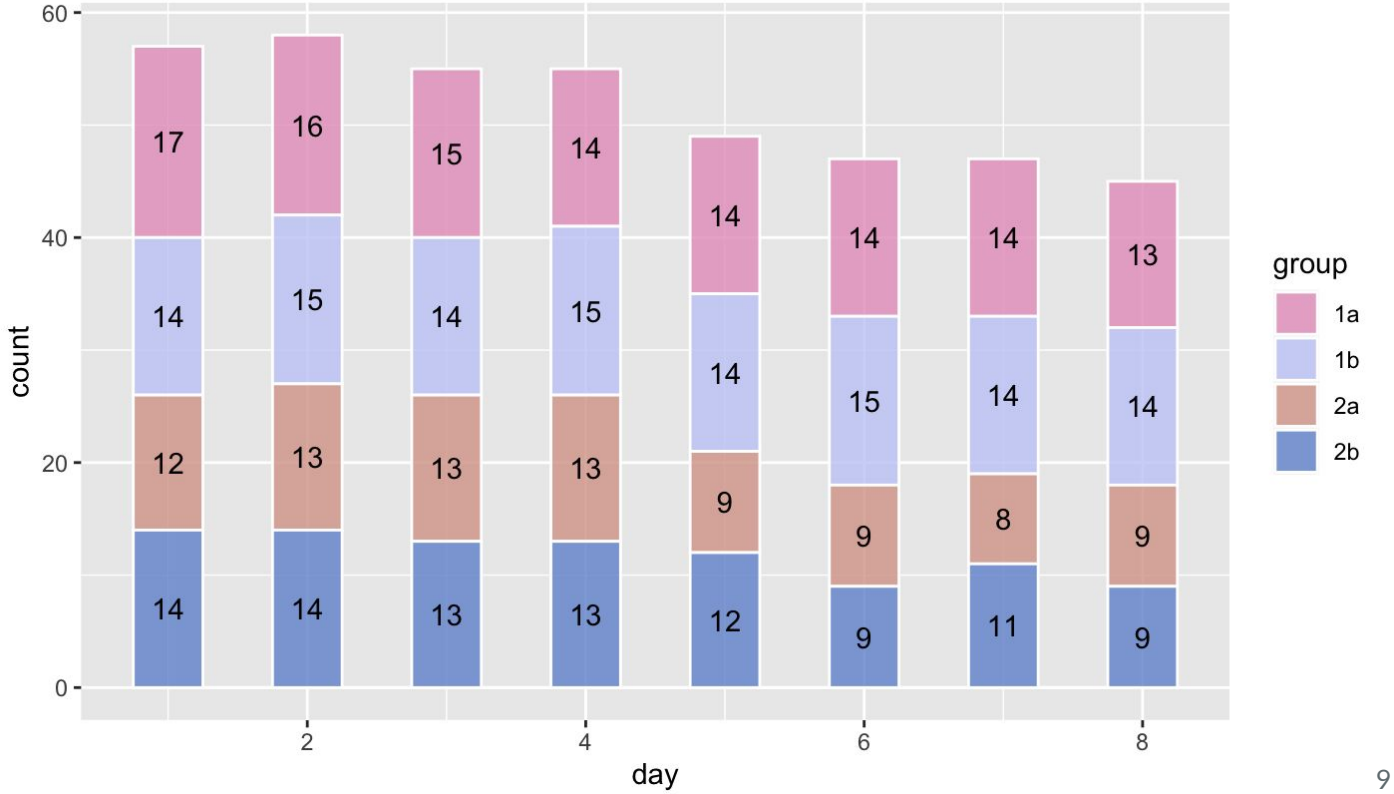
EDA - Task Completions

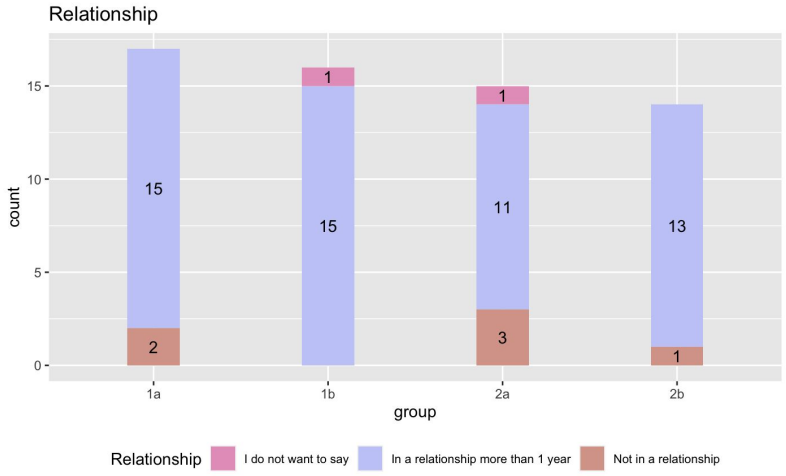
Task Completions

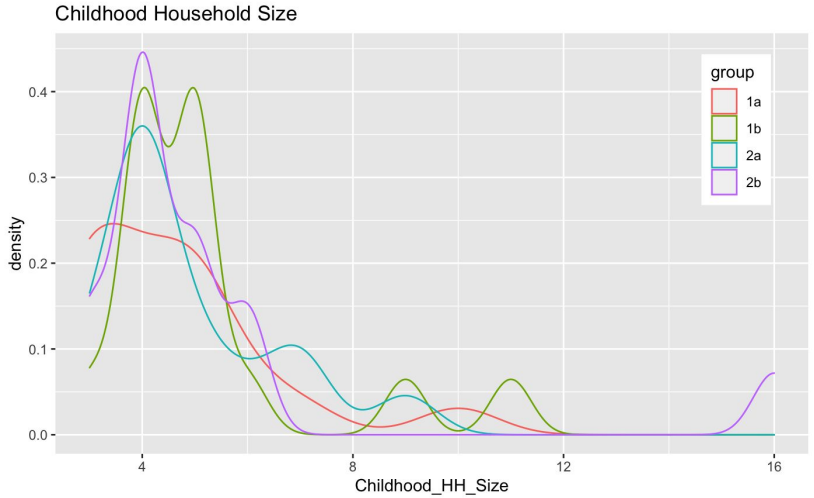
- By day
- By group

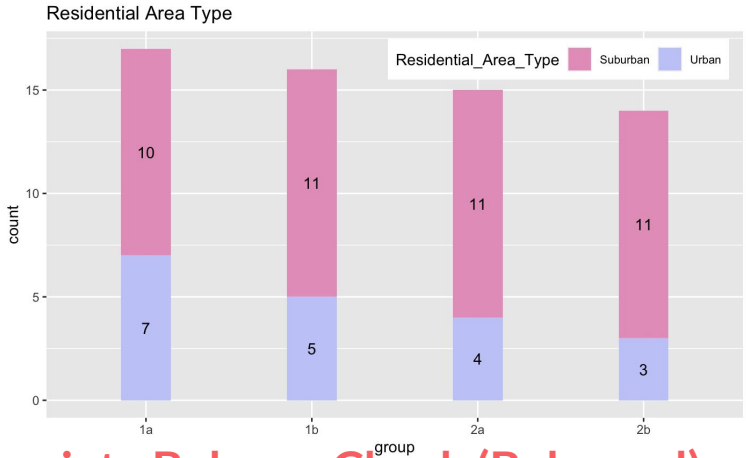
Total subjects assigned initially:

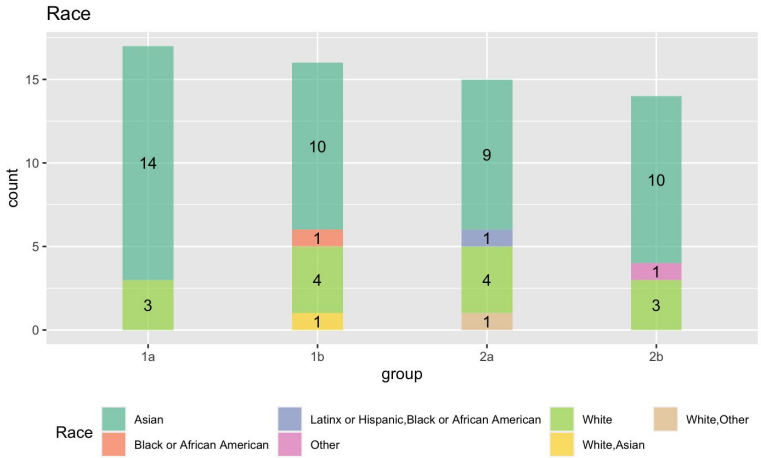
- 1a: 19
- 1b: 18
- 2a: 18
- 2b: 18



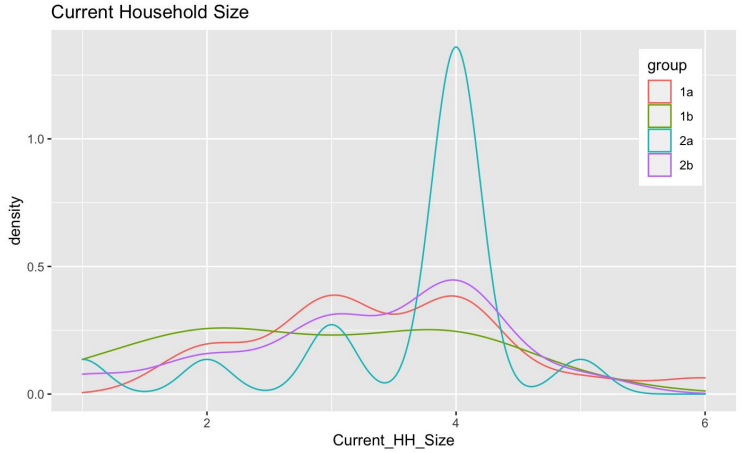


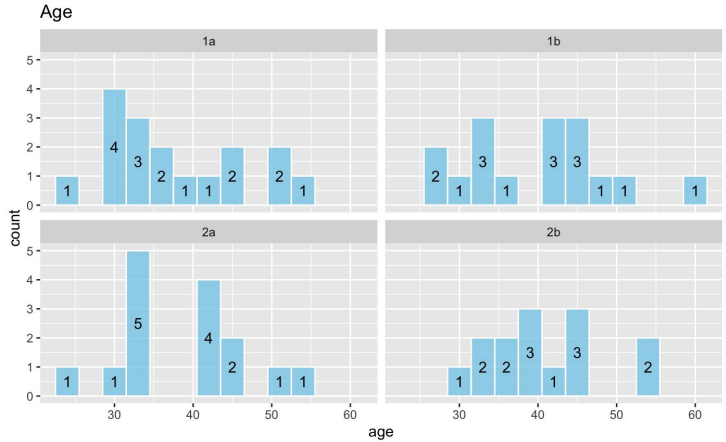


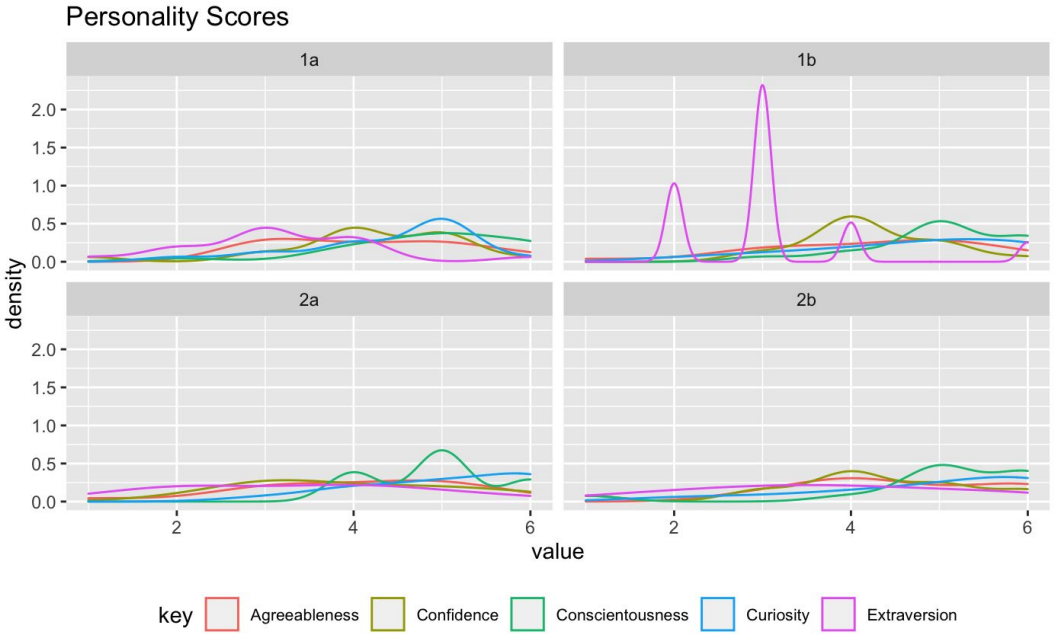




Covariate Balance Check (Balanced)

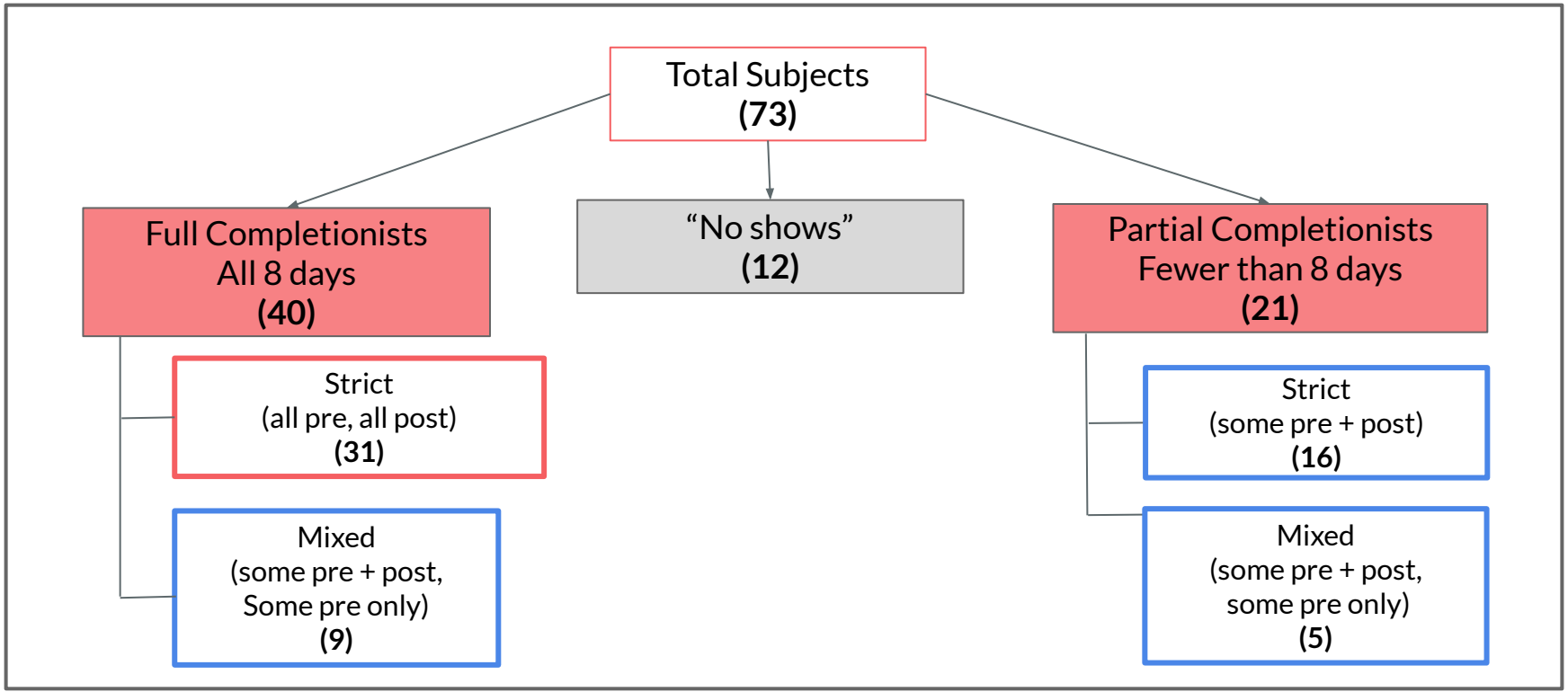






Covariate Balance Check (Imbalanced)

Task Completion & Outcomes Analysis



Short Models

lm(tau ~ kind_activity + high_intensity + others_benefit)

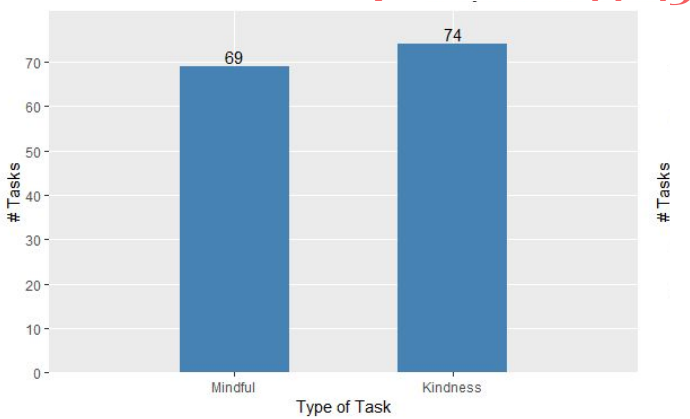
	Improvement In Mood					
	All - EVB Low	All-EVB High	All-EVB Avg	Non-Attriters	Partial/Mixed	Full Strict
kind_activity	0.137* 😃 (0.082)	-0.034 (0.336)	0.120*😃 (0.072)	0.178*😃 (0.106)	-0.022 (0.156)	0.290*** 😃😃😃 (0.102)
high_intensity	0.055 (0.134)	0.432 (0.340)	0.092 (0.139)	0.152 (0.222)	0.268 (0.242)	0.097 (0.276)
others_benefit	-0.082 (0.097)	0.089 (0.249)	-0.065 (0.100)	-0.099 (0.163)	-0.147 (0.346)	-0.065 (0.196)
Constant	0.729*** (0.085)	3.846*** (0.477)	1.041*** (0.080)	1.056*** (0.120)	1.274*** (0.150)	0.927*** (0.243)
Observations	584	584	584	391	143	248
F Statistic	0.676 (df = 3; 580)	0.498 (df = 3; 580)	0.753 (df = 3; 580)	0.782 (df = 3; 387)	0.431 (df = 3; 139)	0.747 (df = 3; 244)
Note:	τ (NA -> 0)	τ (NA -> 10)	τ (NA -> group avg.)			*p<0.1; **p<0.05; ***p<0.01

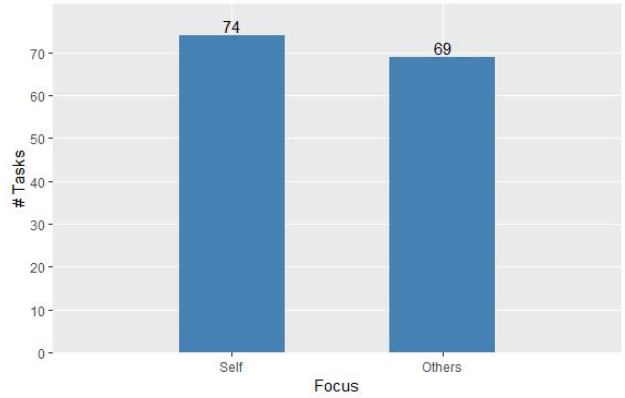
Long Models

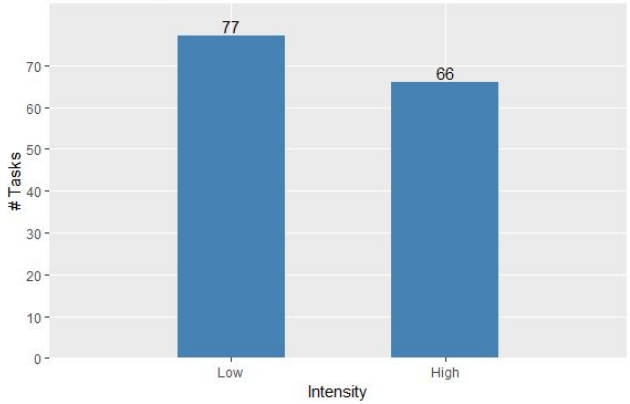
Model 2: with All Possible Covariates

	Improvement In Mood	
	Non-attriters	Full Strict
kind_activity	0.142	0.290***
	(0.096)	(0.106)
high_intensity	0.131	0.097
	(0.239)	(0.287)
others_benefit	-0.134	-0.065
	(0.171)	(0.204)
gender_male	-0.389	-0.159
	(0.269)	(0.371)
age	0.002	0.037
	(0.025)	(0.051)
NationalityCanada	1.870***	
	(0.696)	
NationalityChina	0.985	-0.728
	(0.670)	(1.458)
NationalityGreece	-1.025***	0.145
	(0.379)	(0.729)
NationalityIndia	1.580**	-0.511
	(0.694)	(0.857)
NationalityRomania	0.874	-0.668
	(1.049)	(1.782)
NationalityUnited States of America	1.326***	-0.487
	(0.448)	(0.831)
RaceLatinx or Hispanic,Black or African American	0.678	2.272**
	(0.448)	(1.105)
RaceOther		
RaceWhite	-0.079	0.270
	(0.318)	(0.686)
Num_lang	-0.038	-0.102
	(0.365)	(0.399)
Residential_Area_TypeUrban	-0.506***	-0.928**
	(0.457)	(0.428)
Childhood_HH_Size	0.081	-0.240
	(0.134)	(0.146)
Current_HH_Size	-0.408***	-0.196
	(0.149)	(0.212)
Curiosity	0.003	-0.003
	(0.004)	(0.002)
Conscientousness	-0.017	-0.332
	(0.091)	(0.307)
Extraversion	-0.030	-0.201
	(0.099)	(0.282)
Agreeableness	-0.136	-0.097
	(0.155)	(0.140)
Confidence	-0.080	0.273
	(0.292)	(0.391)
Constant	2.174**	3.729
	(0.950)	(2.326)
Observations	381	248
F Statistic	1.292 (df = 24; 356)	1.658** (df = 21; 226)
Note:		*p<0.1; **p<0.05; ***p<0.01

Did Partial/Mixed subjects engage in fewer Kindness tasks?







NO - just the opposite!

More Kindness tasks

BUT

More LOW intensity tasks
More SELF directed tasks

∴ Greater positive effects may have been neutralized.

Discussion

Does engaging in random acts of kindness improve your mood? YES

If so, how?

- **THINKING < DOING:** Doing improves mood more than thinking
- **YOURSELF = OTHERS:** The beneficiary is less important than the completion
- **HIGH = LOW** : Effort may mute sense of reward

Limitations and Lessons

Power vs. the Pandemic

- History as a third variable (internal validity)
- Difficult to recruit and retain participants (representativeness)
- Generalizability of data from a pandemic (external validity)

Mutable Mood Metrics

- Mood metrics are subjective and self-reported
- Atypical circumstances may lead to atypical emotional responses

Once More With Feeling

- Better match between Task Survey and Experiment groups
- More extreme differences in task Intensity (High vs. Low)

Questions?

We are Team Mindful!

Agenda

- Research Questions
- Design and Execution
  - Original Plan
  - COVID-19 Modifications
  - Pre-Experiment Survey
  - Experiment

- Exploratory Data Analysis
- Models and Findings
  - Short vs. Long models
  - Attrition
  - Generalizability

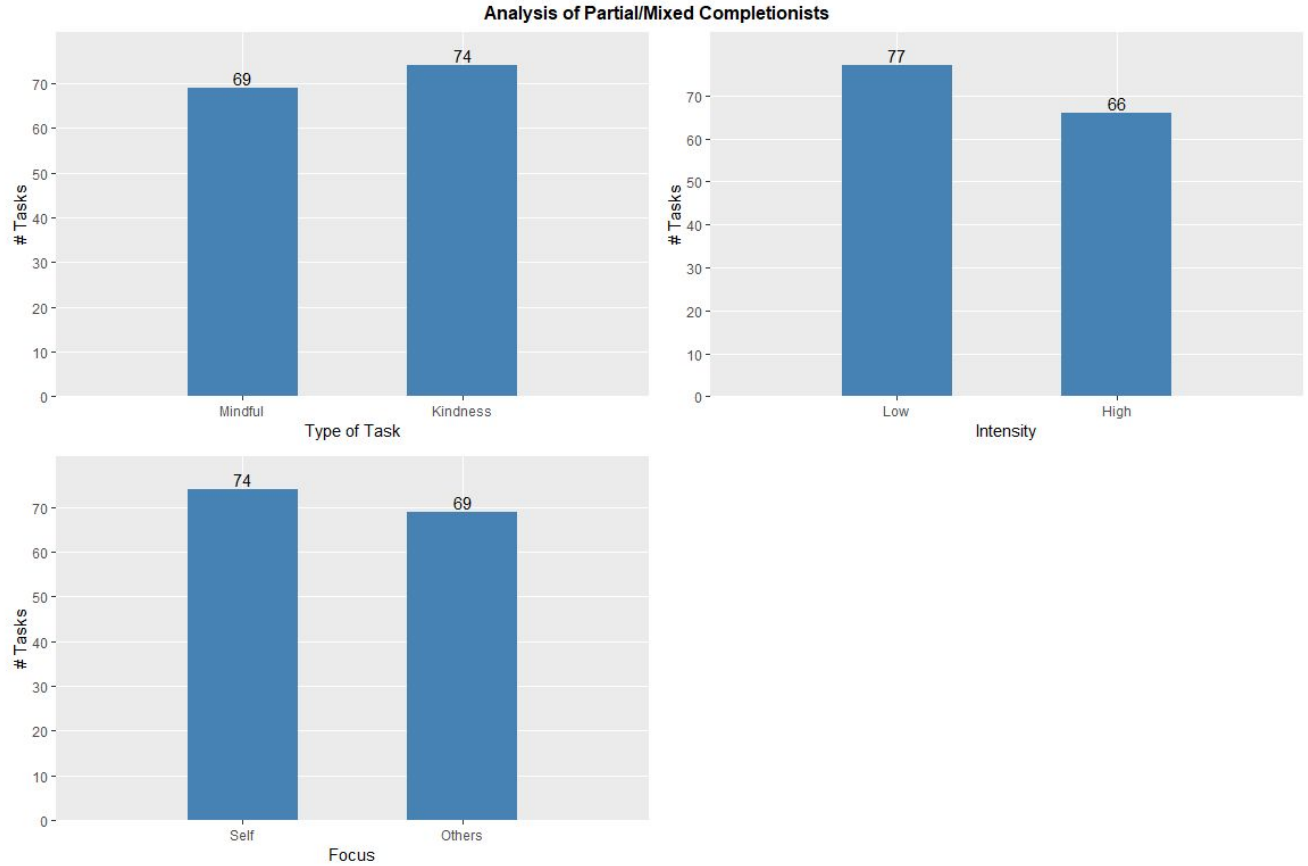
- Lessons and Limitations
  - Power vs. the Pandemic
  - Mutable Mood Metrics
  - Once More With Feeling

Effects of Focus, Intensity & Target

	Improvement In Mood					
	All - EVB Low	All-EVB High	All-EVB Avg	Non-Attriters	Partial/Mixed	Full Strict
kind_activity	0.137*	-0.034	0.120*	0.178*	-0.022	0.290***
	(0.082)	(0.336)	(0.072)	(0.106)	(0.156)	(0.102)
high_intensity	0.055	0.432	0.092	0.152	0.268	0.097
	(0.134)	(0.340)	(0.139)	(0.222)	(0.242)	(0.276)
others_benefit	-0.082	0.089	-0.065	-0.099	-0.147	-0.065
	(0.097)	(0.249)	(0.100)	(0.163)	(0.346)	(0.196)
Constant	0.729***	3.846***	1.041***	1.056***	1.274***	0.927***
	(0.085)	(0.477)	(0.080)	(0.120)	(0.150)	(0.243)
#Unique Subjects	73	73	73	61	30	31
Observations	584	584	584	391	143	248
F Statistic	0.676 (df = 3; 580)	0.498 (df = 3; 580)	0.753 (df = 3; 580)	0.782 (df = 3; 387)	0.431 (df = 3; 139)	0.747 (df = 3; 244)
Note:	τ (NA -> 0)	τ (NA -> 10)	τ (NA -> group avg.)			*p<0.1; **p<0.05; ***p<0.01

	Improvement In Mood	
	Non-Attriters	Full Strict
kind_activity	0.145	0.290***
	(0.100)	(0.106)
high_intensity	0.143	0.097
	(0.239)	(0.287)
others_benefit	-0.127	-0.065
	(0.167)	(0.204)
gender_male	-0.386	-0.159
	(0.294)	(0.371)
age	0.002	0.037
	(0.018)	(0.051)
NationalityCanada	2.914***	
	(1.000)	
NationalityChina	1.678**	-0.728
	(0.837)	(1.458)
NationalityGreece	-0.995***	0.145
	(0.326)	(0.729)
NationalityIndia	2.463**	-0.511
	(0.963)	(0.857)
NationalityRomania	1.784	-0.668
	(1.141)	(1.782)
NationalityUnited States of America	2.054***	-0.487
	(0.541)	(0.831)
RaceLatinx or Hispanic,Black or African American	0.888*	2.272**
	(0.494)	(1.105)
RaceOther		
RaceWhite	0.017	0.270
	(0.190)	(0.686)
RaceWhite,Asian	-0.802	
	(0.255)	
RaceWhite,Other	2.621***	
	(0.789)	

Num_lang	-0.096	-0.102
	(0.320)	(0.399)
Residential_Area_TypeUrban	-0.722***	-0.928**
	(0.484)	(0.428)
Childhood_HH_Size	0.043	-0.240
	(0.148)	(0.146)
Current_HH_Size	-0.448***	-0.196
	(0.157)	(0.212)
Curiosity	0.002	-0.003
	(0.004)	(0.002)
Conscientousness	0.042	-0.332
	(0.138)	(0.307)
Extraversion	-0.044	-0.201
	(0.129)	(0.282)
Agreeableness	-0.181	-0.097
	(0.128)	(0.140)
Confidence	-0.116	0.273
	(0.258)	(0.391)
all8	-0.616	
	(0.254)	
Constant	2.414***	3.729
	(0.622)	(2.326)
#Unique Subjects	61	31
Observations	381	248
F Statistic	1.606** (df = 25; 355)	1.658** (df = 21; 226)
Note:		*p<0.1; **p<0.05; ***p<0.01


Analysis of Partial/Mixed Completionists
Tasks
69
74
Mindful
Kindness
Type of Task
Tasks
77
66
Low
High
Intensity
Tasks
74
69
Self
Others
Focus