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Does a Model's Race Impact Perception of Professionalism?

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W241 Experiments and Causal Inference

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Background

- Race relations in America continues to be a persistent issue
- People are more likely to encounter implicit racial bias in daily life
- This experiment explores implicit racial bias in the context of a corporate setting
- As companies revisit their culture and policies, a similar experiment can be used to spark open discussions on implicit bias

Research Question and Hypothesis

- Research Question: Does implicit racial bias influence perceptions of one's level of professionalism?
- Null hypothesis of No Average Effect: A person's skin tone does not impact subjects' perception of clothes' formality in our study.

$$\mathbf{H}_0 : \mu_{Y(1)} = \mu_{Y(0)}$$

- Expectation is that the outcomes will move in a negative direction due to treatment

Treatment

- Participants are randomly presented a control or treatment version of an image of an outfit
  - Control Image: Outfit worn by light skin tone model
  - Treatment Image: Outfit worn by dark skin tone model

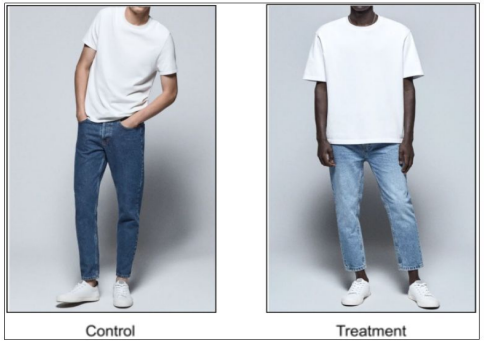
- Participants rate degree to which they think clothing in images conforms to the standard definition of “business casual” attire

- Each participant is asked to respond to four different attire types

Control and Treatment Images

Q1: Attire Category: Female Blouse

Q2: Attire Category: Male Jeans with T - Shirt



Q3: Attire Category: Female Pants

Q4: Attire Category: Male Pants

Sample Survey Questions

Business casual is defined as "a style of clothing that is less formal than traditional business wear, but is still intended to give a professional and businesslike impression".

Do you agree or disagree that this attire meets the definition of business casual?

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

→

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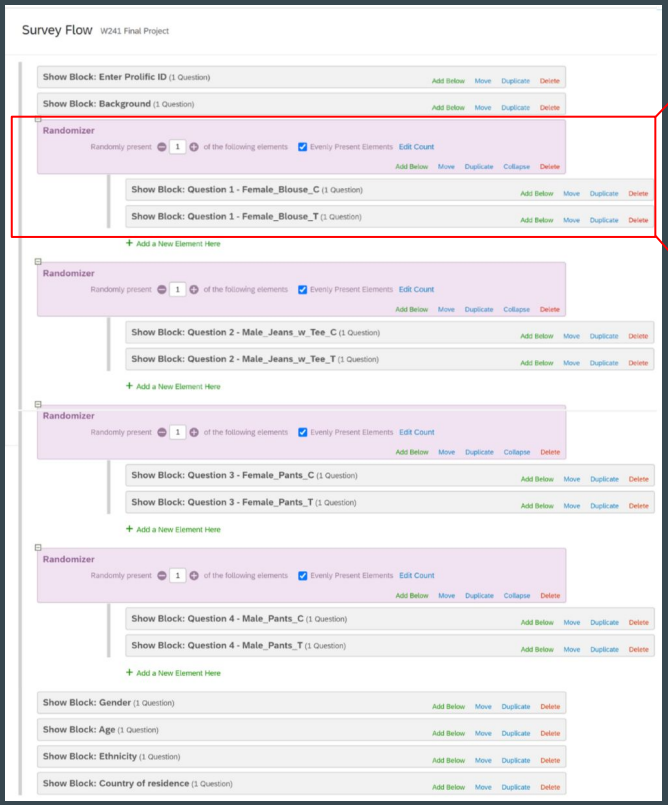
→

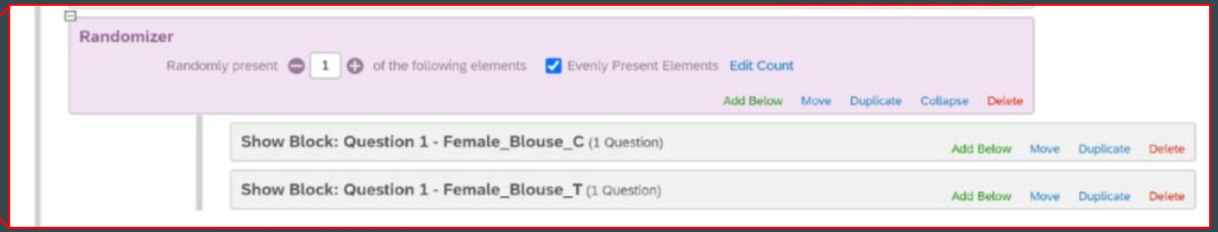
Randomization Process

- 460 US responded to the Qualtrics survey (distributed via Prolific) with each participant responding with sentiment for four different attire categories
    - Total observations : 460 * 4 = 1840
- Qualtrics random assignment functionality used to independently randomize display of control and treatment image for each attire type

- Each participant has an equal chance of being shown control or treatment image for each attire category, regardless of previously shown images

Randomization Process via Qualtrics



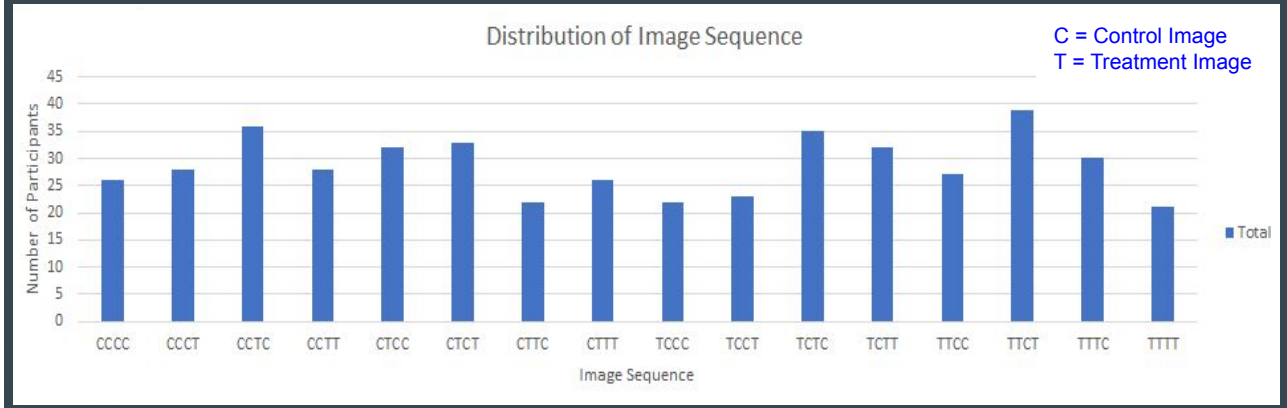


Randomization Process

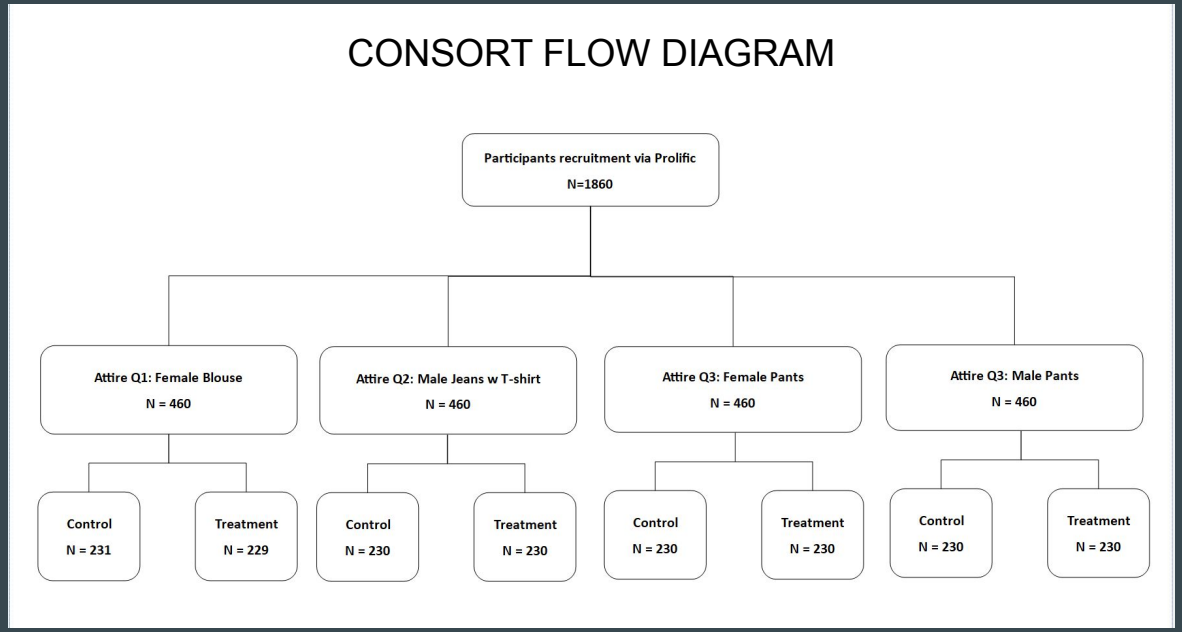
- 16 possible sequences in which a participant can be displayed images
- Distribution of image sequences presented to participants indicates randomization was generally successful.

Possible sequence of images show to participant

Female_Blouse	Male_Jeans_w_Tee	Female_Pants	Male_Pants
C	C	C	C
C	C	C	T
C	C	T	C
C	C	T	T
C	T	C	C
C	T	C	T
C	T	T	C
C	T	T	T
T	C	C	C
T	C	C	T
T	C	T	C
T	C	T	T
T	T	C	C
T	T	C	T
T	T	T	C
T	T	T	T



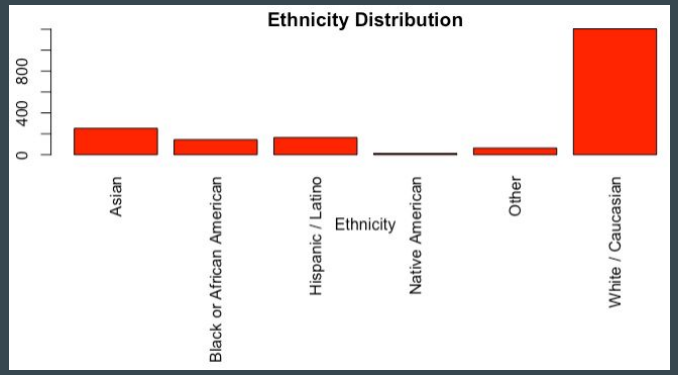
Within-Subjects Randomized Posttest Design

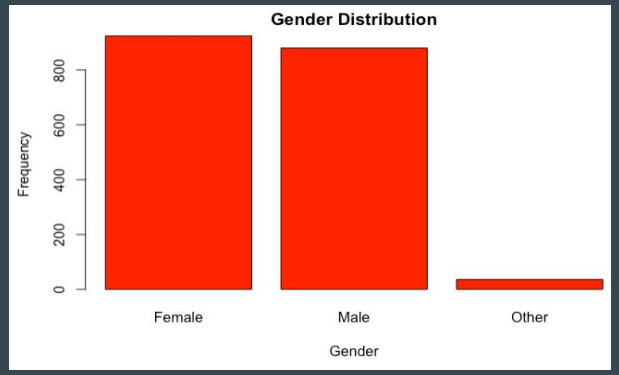


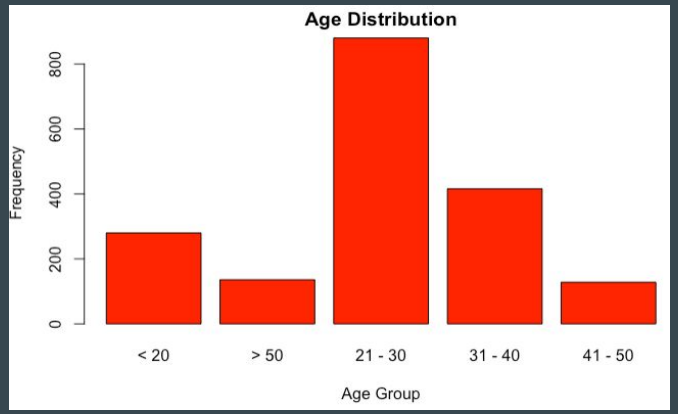
Posttest control group design	
Control group	R - O
Experimental group	R X O

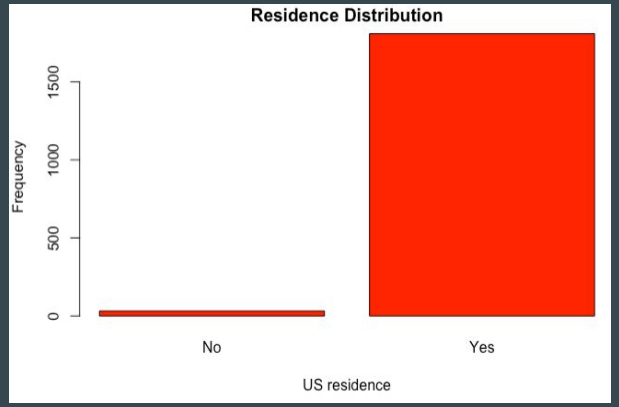
R = randomized allocation to groups
X = treatment
- = no treatment
O = observation or measurement

Exploratory Data Analysis









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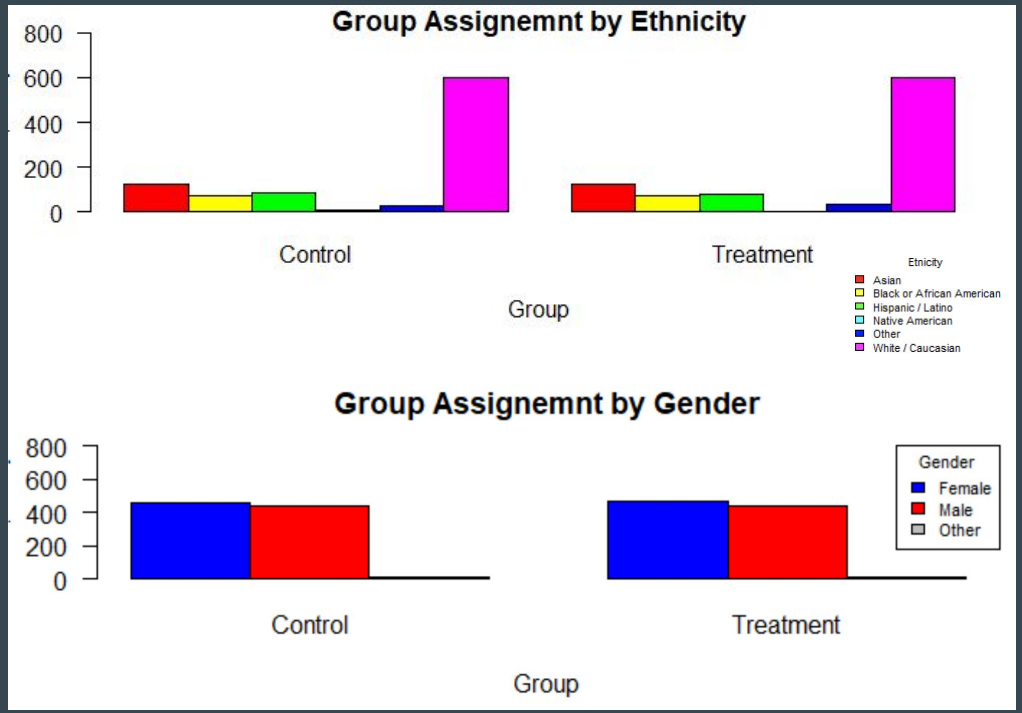

Outcome Measures

- **Effect size**

Group	Cohen's D	Interpretation
Female Blouse	0.063	Trivial Effect
Female Pants	0.413	Small Effect
Male Janes with T-shirt	0.174	Trivial Effect
Male Pants	0.0818	Trivial Effect

Average Treatment Effect

- Female Blouse and Male Pants: No statistical significance
- Male Jeans with T-shirt: Outcomes in the negative direction due to treatment ($p < 0.1$)
- Female Pants: Outcomes in the positive direction due to treatment ($p < 0.05$)
- Overall: Slightly positive with no statistical significance
- Fail to reject the null hypothesis

Table 1: OLS Regression of 4 Images

	Dependent variable:			
	Sentiment Female Blouse	Sentiment Male Jeans	Sentiment Female Pants	Sentiment Male Pants
	(1)	(2)	(3)	(4)
Treatment:Dark Skin	0.077			
	(0.114)			
Treatment:Dark Skin		−0.178*		
		(0.096)		
Treatment:Dark Skin			0.443***	
			(0.100)	
Treatment:Dark Skin				−0.083
				(0.094)
Constant	3.810***	1.780***	1.700***	4.280***
	(0.083)	(0.070)	(0.065)	(0.065)
Observations	460	460	460	460
R^2	0.001	0.008	0.041	0.002
Residual Std. Error (df = 458)	1.220	1.020	1.070	1.010
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 2: OLS Regression of Overall

	Dependent variable:
	Sentiment Overall
Treatment:Dark Skin	0.063
	(0.073)
Constant	2.900***
	(0.052)
Observations	1,840
R^2	0.0004
Residual Std. Error	1.570 (df = 1838)
Note:	*p<0.1; **p<0.05; ***p<0.01

Heterogeneous Effects: Gender

- Definition of notable impact of treatment?
  - If in at least 2 of the 4 experiments there are significant heterogeneous effects in the same direction.
- Results: No persistent impact of gender on perception of formality.

OLS Regressions with Interaction Terms

	Dependent variable:			
	Male_Jeans_w_Tee_Sentiment (1)	Male_Pants_Sentiment (2)	Female_Pants_Sentiment (3)	Female_Blouse_Sentiment (4)
Treatment:Dark Skin Model	-0.055 (0.113)			
Treatment:Dark Skin Model		-0.067 (0.128)		
Treatment:Dark Skin Model			0.539*** (0.139)	
Treatment:Dark Skin Model				-0.175 (0.159)
Male Gender Participant	0.561*** (0.138)	-0.212 (0.129)	0.156 (0.131)	-0.408** (0.168)
Interaction term: Male Participant and Dark Skin Model	-0.280 (0.189)			
Interaction term: Male Participant and Dark Skin Model		-0.068 (0.190)		
Interaction term: Male Participant and Dark Skin Model			-0.215 (0.205)	
Interaction term: Male Participant and Dark Skin Model				0.508** (0.231)
Constant	1.500*** (0.084)	4.390*** (0.089)	1.630*** (0.089)	4.020*** (0.103)
Observations	451	451	451	451
R2	0.058	0.017	0.042	0.016
Residual Std. Error (df = 447)	0.991	1.000	1.080	1.210
Note:				*p<0.1; **p<0.05; ***p<0.01

Heterogeneous Effects: Race and Perception

- Were white subjects' perceptions of formality differently impacted by a Black model?
- Results: No demonstrated impact of white ethnicity on perception of clothing

OLS Regressions with Interaction Terms: Participant Gender

	Dependent variable:			
	Male_Jeans_w_Tee_Sentiment (1)	Male_Pants_Sentiment (2)	Female_Pants_Sentiment (3)	Female_Blouse_Sentiment (4)
Treatment:Dark Skin Model	-0.322** (0.162)			
Treatment:Dark Skin Model		0.204 (0.148)		
Treatment:Dark Skin Model			0.406** (0.179)	
Treatment:Dark Skin Model				0.191 (0.193)
White Participant	-0.097 (0.154)	0.126 (0.135)	-0.054 (0.144)	0.048 (0.174)
Interaction term: White Participant and Dark Skin Model	0.222 (0.201)			
Interaction term: White Participant and Dark Skin Model		-0.428** (0.190)		
Interaction term: White Participant and Dark Skin Model			0.056 (0.217)	
Interaction term: White Participant and Dark Skin Model				-0.172 (0.239)
Constant	1.840*** (0.129)	4.210*** (0.107)	1.740*** (0.123)	3.780*** (0.140)
Observations	460	460	460	460
R2	0.010	0.013	0.041	0.002
Residual Std. Error (df = 456)	1.020	1.010	1.080	1.220
Note:				*p<0.1; **p<0.05; ***p<0.01

Conclusion

- Lessons Learned
  - Null hypothesis of No Average Effect: A person's skin tone does not impact subjects' perception of clothes' formality in our study.
  - Failed to reject
- Concerns
  - Attention checks
  - Outliers
  - Industry