Understanding of Racial Stigma Associated with Assistive Device Use

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Stigma and Race

- In the aging population, prevalence of visual impairments is projected to increase.

- Rehabilitation services have shown to improve the quality of life and provide the necessary tools to remain autonomous. However, research by Overbury & Wittich (2011) shows, only 56% of visually impaired access services despite knowing about them.

- A study by Resnik et al. (2009) showed that within minority populations, societal influences and attitudes towards device use can have negative impacts resulting in avoidance of mobility device use.

- Within Black and Hispanic populations, there is a negative predisposition towards device use and an inclination towards more socially acceptable "fashionable aids".

- Hispanic participants articulated a greater preference for human assistance over use of mobility devices. Whereas, within White and Black populations there exists an inclination towards upholding independence.

- This suggests that there are racial or ethnic factors, beliefs and perceptions that can influence an individual's perspective and use of assistive devices.

Hypotheses

Studies have shown;

- Heart rate is significantly lower when exposed to labelled targets. In aversive situations, this is attributed to;
  - Increased situational demands and
  - Hardwiring of animals to promote survival (Lewis, 2014).

- Higher levels of heart rate variability (HRV) in individuals who have greater ability to regulate emotion (Wei et al., 2017).

Therefore we hypothesized;

- Heart-rate variability (HRV) will increase (become more erratic) when young healthy adults observe images of assistive device users and

- An even larger variability when these images contain individuals that are non-White, compared to images of White individuals.

Materials & Procedure

- 21 students (19-30 years), recruited through Concordia Undergraduate Psychology Department and word of mouth.

- The average age was 22 years with the gender distribution being 18 females and 3 males. Of the 21 participants, 15 identified as White and 6 as non-White.

- Participants were randomly assigned to the order of testing blocks and questionnaires.

- 5 Power point presentations were demonstrated to each participant while their HRV was being measured. This was done using an Infra-red photoplethysmography pulse-wave sensor placed on the left finger and connected to an Arduino Uno board (to detect the raw heart rate of the participant)

  - Control condition (18 neutral images) + 4 blocks of 18 images (w/ or w/out device + varying in race, age, and gender)

  - Demographics questionnaire; Expectations Regarding Aging (12 item) questionnaire & Explanatory Model Interview Catalogue (15 item stigma scale).

	Caucasian	Not Caucasian
With device		
Without device		
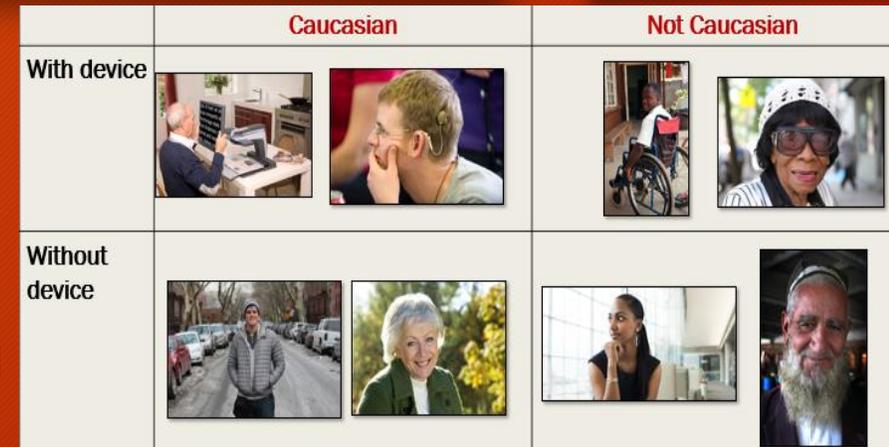
- Explanatory Model Interview Catalogue (EMIC)
- 15 items

| No.		Yes	Possibly	No	Don't Know	
		2	1	0	0	Score
8.	Would people in your community think less of the family of a person who uses assistive devices?					

- Expectations Regarding Aging (ERA)
- 12 items

No.		Definitely True	Somewhat True	Somewhat False	Definitely False
1.	When people get older, they need to lower their expectations of how healthy they can be.	1	2	3	4

Data Analysis

- A **2 x 2 repeated measures ANOVA**
  was done to determine whether there exists observable differences between the variable measures of participant group i.e. stigmatization based on the two factors i.e.; race (White versus non-White) and assistive device (device versus no device).

- A **correlational matrix**
  was also done to test for any association between the EMIC/ ERA questionnaire scores and the different heart rate variables or measures.

- In addition, an **independent t-test analysis**
  was conducted to observe whether there exists any trend between the two factors i.e. participant race (White versus non-White) and the EMIC/ ERA questionnaire scores.

Results

- The findings indicated no significant variance in HRV among participant groups based on; race, device use or the interaction between the two factors.
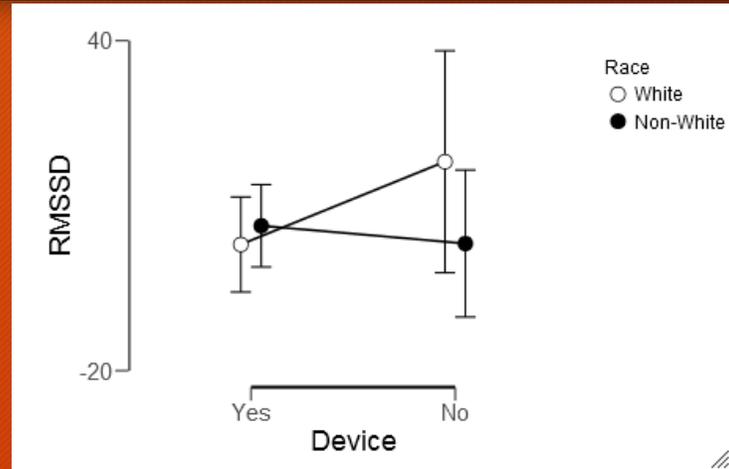
$F(1, 19) = 1.405, p = 0.250$

- However, we did observe a moderate correlation in HRV among participants regardless of, whether the participant was viewing images of White or non-White individuals and assistive device users versus non-users.

		RMSSD_WhDv	RMSSD_WhNDv	RMSSD_NWhDv	RMSSD_NWhNDv	EMIC Score	ERA Score
RMSSD_WhDv	Pearson's r	—					
	p-value	—					
RMSSD_WhNDv	Pearson's r	0.639	—				
	p-value	0.002	—				
RMSSD_NWhDv	Pearson's r	0.880	0.752	—			
	p-value	< .001	< .001	—			
RMSSD_NWhNDv	Pearson's r	0.762	0.445	0.656	—		
	p-value	< .001	0.049	0.002	—		
EMIC Score	Pearson's r	0.312	−0.155	0.225	0.131	—	
	p-value	0.181	0.514	0.341	0.582	—	
ERA Score	Pearson's r	−0.089	−0.116	−0.268	−0.062	−0.116	—
	p-value	0.710	0.626	0.253	0.795	0.626	—

Conclusion

- Overall, this study showed no racial stigmatization associated with assistive device use which is contrary to, what we had predicted.

- This could mean that our sample did not perceive race as a stigmatizing factor which is a positive notion.

- However, it is important to consider that the results could have been quite different based on the sample (for example, older participants or first generation immigrants).

Future considerations

Limitations

- Small sample size, younger age group (comparatively more open-minded)

- Psychology students (more aware of stigma)

- HRV device was sensitive (can alter reliability/ validity of data)

- External factors – for example, loud sounds (can cause startling effect)

- HRV related to images, anxiety or other factors

- No cut-off for questionnaires

Future Studies

- Must consider testing a more varied age group.

- Test a more varied population of individuals (outside of schools, not only psychology students).

- A combination of a qualitative interview & quantitative measures would provide a more comprehensive insight.

- Consider also testing for other factors such as, eye movement tracking.

References & Acknowledgement

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