DRP Topic: Analysis Of Variance (ANOVA)

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Introduction to FaceOff Research Paper

Background

- Available Online: Oct. 31, 2009
- Acknowledges growing trend of Social Interaction, via Internet to:
    - maintain existing friendships
    - form romantic connections
    - initiate online relationships
- Focuses on Facebook as an example Social Networking Service where users communicate and foster these relationships
    - provides Statistics for rise of Facebook make it a credible source for pulling this kind of info and using it as a database
- Goal: Understand how visual cues affect people's willingness to friend someone on Facebook.

Additional Info

- Highlights features that are vital to initiating or maintaining connections:
  - Profile Pictures – real selves, animated photo, etc.
  - Personal Info & Biographies
  - Picture and Video posts
- Claims Computer-mediated communication (CMC) can surpass level of affection and emotion of face-to-face interaction, due to lack of personal cues:
  - Reliance on more idealized assumptions
  - Placement of individuals in steoreotypical categories
  - Lead to more extreme impression of others
  - While Face to face allows showcase of Bored Expressions, hesitations, imperfections
  - Crafting of perfect messages
  - Minimize undesirable cues, physical or behavioral

Research on Facebook

- Studying college students' use of Facebook:
  - Academic interests
  - Self-presentation
  - Relationship marketing strategies
- Citing several studies that all have the same conclusion: **Facebook is primarily used to support pre-existing relationships rather than make new**
  - Differs from previous early CMC research that claimed online communities are more likely to meet others outside of pre-existing social group
- Found Positive and Negative outcomes of Facebook use:
  - Risks like privacy problems and stalking (Negative Ex.)
  - Helps maintain social relationships and build social capital (Positive Ex.)
- If direct cues are absent, cues can still be drawn to influence how attractive or likable a profile owner appears, even when the owner didn't post that information through:
  - # of friends an individual has
  - friends' photos and comments how attractive or likable a profile owner appears, even when the owner didn't post that information.

Theoretical Framework

- Early CMC Theory: lack of cues -> weaken relationships
- Hyperpersonal model: lack of cues -> strengthen idealized impressions
  - proposes that online relationships can become more intimate than face-to-face ones due to factors like message control, selective self-presentation, and idealized perceptions
- When forming First Impressions: Visual Cues are most Important (attractiveness from photos)
- Photo Presence, Attractiveness, and Gender Interactions influence willingness to initiate online friendships
- Attractiveness -> More positive character traits -> reap greater rewards

Hypotheses

- **H1a:** Those who are exposed to attractive profile photos will be more willing to initiate friendships than those in the unattractive and no-photo conditions.
- **H1b:** Those who are exposed to unattractive profile photos will be less willing to initiate friendships than those exposed to the no-photo condition.
- **H2:** Evaluators will be more willing to initiate friendships with opposite-sex profile owners than with same-sex profile owners.
  - Though people search of same-sex friends for reasons of bonding over similar intelligence, physical attractiveness, social class, educational level,
  - It Also means many same-sex friends may result in competing for or stealing mates
- **H3a:** Evaluators will be more willing to initiate friendships with opposite-sex profile owners with attractive photos than with attractive same-sex dyads.
- **H3b:** Evaluators will be less willing to initiate friendships with opposite-sex profile owners with unattractive photos than with unattractive same-sex dyads
- **H3c:** Evaluators will be more likely to initiate friendships with opposite-sex profile owners with no-photos than with no-photo same-sex dyads.

Experiment: Method

- Intro Communications Course at public university in Eastern US
- Voluntary participation – 350 college students
- 93% randomly assigned (important for generalization)
  - Rest assigned to ensure equal group sizes
- 11% excluded for no Facebook account or didn’t indicate gender
- Male 57% - Overall Mean: 20.2 yrs old

Experiment: Procedure

- Measurement [1, 7] – willingness to initiate friendship with profile
  - Also collected participants demographic info (e.g. age, gender, and college year)
- Participants exposed to 1 of 6 fictitious Facebook-like profiles
  - Average across four scores used to compute individual scores
    - Willing to add profile as friend
    - Accept friendship invitation
    - "poke" profile owner (send a playful virtual nudge to get their attention, say hello, or show you're thinking of them
    - Write on profile owners' wall (posting a message, image, or status update directly onto another person's public profile page for them and others to see.

Decided Attractive vs Unattractive through commonly discussed and agreed upon traits, as well as a manipulation check: Facial symmetry, facial averageness, distinctiveness (e.g. high eyebrows, widely spaced large eyes with dilated pupils, high cheekbones, small nose large smile, etc.)

Means and standard deviations.

	Attractive		Unattractive		No-photo	
	Male	Female	Male	Female	Male	Female
Evaluator						
Male						
M	2.24	3.66	2.29	2.13	2.09	3.13
SD	1.06	1.28	1.15	1.05	1.08	1.65
N	35	29	30	30	28	26
Female						
M	2.92	2.04	2.08	2.54	2.23	2.16
SD	1.62	0.84	1.24	1.12	1.57	1.10
N	20	23	15	26	27	22

Results Analysis using ANOVA

- 3-way ANOVA was employed
  - 12 cells: 2 (owner gender: male, female) x 3 (visual condition: attractive, unattractive, no-photo) x 2 (evaluator's gender: male, female)
- DV: Willingness to initiate friendship on Facebook
- Note: Study was designed to explore the role visual cues play in initial friending behavior on SNSs like Facebook
- ANOVA tests how the independent variables affect the average score of willingness to initiate friendship on Facebook

One-way ANOVA example

Means and standard deviations.

	Attractive		Unattractive		No-photo	
	Male	Female	Male	Female	Male	Female
Evaluator						
Male						
M	2.24	3.66	2.29	2.13	2.09	3.13
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- Owner Gender – 2 levels (male, female)
- Owner = male
  - M = 2.29310
  - N = 155
- Owner = female
  - M = 2.64038
  - N = 156
- Grand mean: 2.46730

SS = Sum of Squares: Measures variation
(How much variation is there between groups?)

SSB = 155(2.29310 – 2.46730)^2 + 156(2.64038 – 2.46730)^2

SSW: Add together for each cell, the squared SD * (n-1) + n*(mean_i – mean_group)^2

Df = degrees of freedom; 3 choices, 2 choices are free

MSB = SSB/df_b MSW = SSW/df_w

F statistic/test = MSB/MSW: whether the variability shown by model is large relative to the unexplained variability

If F test is less or close to 1, this means the group means are all close together
If SSB is large relative to SSW/F is large, then that is unlikely and groups differ a lot

Overall:

- Goal: how visual cues affect people's willingness to friend someone on Facebook.
- ANOVA tells us if groups differences are actually statistically significant
  - Though it doesn't tell which specific groups
  - How much variance is explained
  - Role of noise
- Check to see how conclusions of F-test and ANOVA supports Hypotheses

Personal Interest

- How different study methods affect students' quiz scores? (Flash cards, practice tests, textbook reading -> percentage on quiz/test)
- Sleep -> Cognitive Performance (Hours of sleep -> Memory Test score)
- Exercise Type -> Mood (Exercise Type -> Mood rating)
- Diet -> Energy Levels (High-protein, carb, or vegetarian -> Energy during day)
- Music Genre -> Productivity (Classical, pop, none -> tasks completed in a time slot