



Personality Assessment Through the Situational and Behavioral Features of Instagram Photos



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Introduction

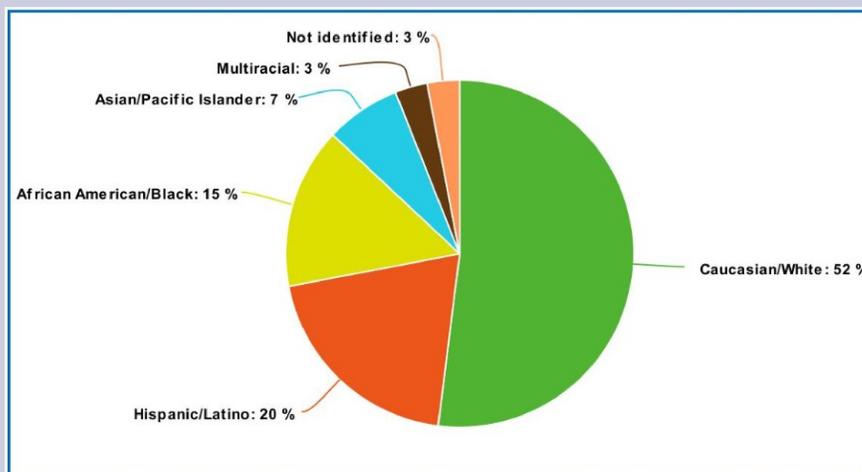
Online social networks (OSNs) have become a popular method for studying personality, behavior, and emotions (e.g. Gosling, Gaddis, & Vazire, 2007; Schwartz et al., 2013; Golbeck, Robles, & Turner, 2011; Park et al., 2015; Seidman, 2013; Back et al., 2010).

Through posts, “likes,” and interactions on OSNs such as Facebook, Twitter, and Instagram, individuals leave behind a digital footprint that reveals intimate details about who they are and how they behave.

The purpose of the current study is to explore how the content of photos posted on OSNs can be used to assess personality constructs of an individual.

Method

208 (35% male; 65% female) completed both the study in two sessions. Age ranged from 18-29 ($M = 18.83$). Self-reported ethnic breakdown can be seen below.



Measures included:

- **Personality.** 82 item Hogan Personality Inventory (HPI: Hogan, 1995)
- **NPI.** 13-item Narcissistic Personality Inventory (NPI-13: Gentile et al., 2013)
- **RSES.** The 10-item Rosenberg Self-Esteem Scale (RSES: Rosenberg, 1965) measures global self-worth.

Photo Assessment

We used an existing conceptualization of situation information (Rauthmann, Sherman, & Funder, 2015) to assess the three different features of psychological situations in photos:

1. **Cues.** A total of 3363 available photos images from 201 subjects were analyzed using the computer vision software Clarifai (<https://www.clarifai.com>).
2. **Characteristics.** Each photo was self-rated by participants using the S8-I (Rauthmann & Sherman, 2016) to assess the major dimensions of psychological situation characteristics.
3. **Classes.** Trained coders assessed each participant photo and its caption on a set of preestablished photo classes.

Behavioral and Affective Expressions of Personality. Each photo was self-rated by participants on a seven-point bipolar adjective scale based on the Big Five Aspect Scales (DeYoung, Quilty, & Peterson, 2007), and include the Honesty/Humility dimension of the HEXACO (Lee & Ashton, 2004).

Table 2. HPI Personality Correlations to Situational and Behavioral Features of Instagram Photos.

HPI Personality	Cues	Characteristics	Classes	Behavioral and Affective Expressions of Personality
	$r(p)$	$r(p)$	$r(p)$	$r(p)$
Adjustment: <i>confidence, self-esteem, and composure under pressure</i>		Positivity -.19** Sociality -.14*	Meme .16*	Orderliness .14* Assertive .16* Intellect .18*
Ambition: <i>initiative, competitiveness, and desire for leadership</i>		Positivity -.19** Negativity .15*		Assertive .19**
Sociability: <i>extraversion, gregarious, and need for social interaction</i>	Cars -.17* Landscape -.18* Pets -.21** In the city -.19**		Animal -.15* Fashion .25***	Industriousness .16* Orderliness .17* Enthusiastic .18* Assertive .26*** Intellect .24*** Openness .19**
Interpersonal Sensitivity: <i>tact, perceptiveness, and ability to maintain relationships</i>			Animal -.15* Food -.16* Fashion .15* Political -.25***	
Prudence: <i>self-discipline, responsibility, and conscientiousness</i>		Positivity -.16*	Partly Clothed -.15*	Assertive .22** Intellect .16* Openness .17*
Inquisitive: <i>Imagination, curiosity and creative potential</i>	General Events -.22**	Intellect .21** Adversity .14* Deception .18*	Quote -.16* Partly Clothed -.14*	
Learning Approach: <i>achievement-oriented and up-to-date on technical matters</i>	Beach & Leisure -.17*	Intellect .15* Mating .14* Negativity .16* Deception .20**	Selfie .17*	

Note for Tables 2-4: r = Pearson's r with Holm's adjustment; *** $p < .001$, ** $p < .01$, * $p < .05$; N ranges from 188 to 199 for Cues; N ranges from 196 to 208 for Characteristics; N ranges from 180 to 191 for Classes.

Results

Narcissism and Self-Esteem Correlations to Situational and Behavioral Features of Instagram Photos.

	Photo Cues	Photo Characteristics	Photo classes	Behavioral and Affective Expressions of Personality
	$r(p)$	$r(p)$	$r(p)$	$r(p)$
Self-Concept Personality				
Narcissism	Selfie .19** Landscape -.19**		Selfie .18* Landscape -.18*	Industriousness .18* Orderliness .14* Assertive .19**
Self-Esteem	Beauty/Fashion -.15*		Quote -.15* Meme -.16* Sports .14*	Withdrawal -.20** Compassion .15* Industriousness .15* Enthusiastic .15* Assertive .14* Happy .17* Self-Esteem .16*

Expected results from randomization tests compared to actual correlation results

Correlation between personality and:	Expected by Chance		Actual	
	Average absolute r	Number of Significant Correlations	Average absolute r (SD)	Number of Significant Correlations
Cues	.06	13.68	.07** (.05)	28
Characteristics	.06	8.42	.07^ (.05)	18
Classes	.06	18.5	.07** (.05)	40
Behavioral and Affective Expressions	.06	15.45	.08** (.06)	54

Note: Standard deviation and p-value of the observed average absolute r ; *** $p < .001$, ** $p < .01$, * $p < .05$, ^ $p < .10$

Discussion

Assessing personality through situational features of photos

The randomization procedures for correlations between personality and cues, characteristics, classes, and behavior allow us to conclude that it is indeed possible to assess individual differences in personality through the situational features of photos on Instagram, beyond that expected by chance. We have demonstrated this through both subjective and objective ratings and through both human- and machine-detected features in photos. This contributes to methods of assessing the personality triad of persons, situations, and behavior (Funder, 2006) and provides evidence that the three are interrelated.