

# Is Your Profile Picture Worth 1000 Words? Photo Characteristics Associated with Personality Impression Agreement.

**Fitzgerald Steele, Jr.**

GROK Lab  
The University of Iowa  
Dept of Industrial Engineering  
Iowa City, IA 52245  
fitzgerald-steele@uiowa.edu

**David C. Evans**

Psychster Inc.  
16904 Juanita Dr. #145  
Kenmore, WA 98028  
david@psychster.com

**Rachel K. Green**

Psychster Inc.  
16904 Juanita Dr. #145  
Kenmore, WA 98028  
rachel@psychster.com

## Abstract

Social-Networking Websites (SNWs) are rapidly becoming a central media for social exchange. A basic question is how well are people able to get to know each other through these websites? In this study, we explore characteristics of the profile photographs and their association with impression agreement. Using a specially designed social networking website (<http://www.YouJustGetMe.com>), we examined 1,316 first-impressions of profile owners who had posted photographs as part of a complete profile. The results suggest that photographs in which the profile owners were smiling, outdoors, and shown with others were associated with higher impression agreement. Several gender interactions suggested that other aspects of the photographs, including head covering and apparent weight, also affected impression agreement depending on the gender of the profile owner and visitors. These results were interpreted in light of the literature on interpersonal perception.

## Introduction

The rapid growth of social network or social networking websites (SNWs) means that more people are finding ways to use an online representation of their identity to facilitate their social interactions (boyd & Ellison 2007). In both casual and professional contexts, it is increasingly common for people to visit others' online profiles as an early step in getting to know them. Although many experts still consider online profiles a fairly limited source of information about the owners' personalities (Weeks 2009), other researchers view them as a controlled medium in which profile owners post identity claims that are specifically chosen to convey their personalities (Gosling, Gaddis and Vazire 2007; Gosling, et al 2002). Research is emerging that suggests that visitors to online profiles do tend to view the profile owners as the owners view themselves (Evans, Gosling, and Carroll 2008; Gosling, Gaddis and Vazire 2007), even if they have never met in person (Evans, Gosling, and Carroll 2008). Thus, research attention is starting to turn to the question of which elements of the profiles are most effective at conveying personality information.

This study extends our research on textual information in social networking website profiles (Evans, Gosling, and Carroll 2008) and that of others (Gosling, Gaddis and Vazire 2007; Zebrowitz and Collins 1997), by exploring the association between profile photographs and the ability of

profile visitors to accurately estimate personality traits of the profile owner. Researchers commonly use "self-other agreement" (Funder 1999) as a central metric of first-impressions, which we refer to as "impression agreement." Impression agreement is a Pearson-r correlation between a target's self-ratings of personality (using 5 point scales on 20 or more items) and a rater's impression of that target on the same items. We ask the question, "Are some characteristics of profile photos associated with higher impression agreement than others?"

A substantial social and personality psychology literature suggests this to be the case. Funder's Realistic Accuracy Model (RAM) (Funder 1999) provides a theoretical framework that outlines four main influences on impression agreement. Paraphrased, they are: (1) skilled raters (2) transparent targets (3) easy-to-read traits and (4) good information. Personality assessments now commonly use scales based on the Five Factor model (Goldberg, et al 2006; Kenny 1994; McCrae and Costa 1999) which assess five major domains widely agreed to account for most personality traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.

A review by Zebrowitz and Collins (Zebrowitz and Collins 1997) documented several findings on accurate personality estimates with zero acquaintance. For example, specific characteristics viewable in photographs have indeed been shown to convey the self-reported personality of the person shown. For example, targets with makeup, showy dress, and stylish hair are accurately inferred to be Extraverted. Openness and Neuroticism, conversely, have not been shown to be reliably inferred from any observable trait. Also, women are better than men are at noticing subtle clues of others' personality.

We conducted a field study in which we coded several characteristics of the profile photographs naturalistically uploaded to a specially designed social networking site which was equipped with a feature allowing profile owners to rate their own personalities and be rated in turn rated by visitors. We predicted broadly that the more static information contained in the photographs (facial characteristics, hair, contextual cues), the higher the impression agreement.

## Method

### Materials

We built and launched a social networking site called <http://www.YouJustGetMe.com> in April, 2007. In addition to standard SNW features (profiles, messages, browsing), participants rated their own personalities on 40 items drawn from a pool of 121 items that included both 21 items from the Big Five Inventory (BFI-K Form S) (John 2005) and 100 items from the International Personality Item Pool (IPIP) (Goldberg et al 2006). Stratified random sampling ensured that at least 4 to 5 straight-scored and 4-5 reversed-scored items were drawn from each of the 5 personality domains (McCrae and Costa 1999). Participants also formed impressions of others by rating them on the same items (see Procedure below). At the time of this report, 14,289 total registered members had formed 21,919 total impressions on YouJustGetMe.com.

### Participants

A total of 1316 first-impressions from 736 unique raters guessing 440 unique targets were collected between October 1, 2007 and July 15, 2008.

The average rater age was 27 years old, with a median of 24 years old (224 participant raters did not report their age). The average target age was 31 years old, with a median of 26 years old. Fifty-one percent of the participant raters were female and 35% were male (14% of participant raters did not report their gender). Forty-seven percent of the participant targets were female and 53% were male.

### Procedure

Participants were encouraged complete a personal profile by disclosing answers on 33 field pre-defined fields "to give clues about your personality so people can guess what you're like" (e.g. my spirituality, a great movie, most embarrassing moment). The impact of each of these elements on self-other agreement in impressions was reported elsewhere (Evans, Gosling, and Carroll 2008). In addition, participants were encouraged to upload a single digital photograph that was automatically put into a uniform size by the website. This was not required and no restrictions or instructions were given as to an expected or appropriate photo.

Participants recorded impressions of others by clicking a link that directed them to the profile of another randomly-selected participant. Raters were unlikely to be previously acquainted with the targets.

Raters formed impressions of targets by completing the same 40 items used in the self-ratings, only this time under the instructions "I see {target's display name} as someone who..." Both the rater and target received feedback about the impression as a reinforcer. Because only first impressions -- ratings made before any feedback about a given target was shown -- were analyzed, the effect of feedback on the impressions was indirect at most.

### Coding of Photo Characteristics

Three independent raters who were blind to the hypotheses coded each picture on eleven different characteristics shown in Table 1. Reliability of the ratings were favorable (Cronbach's alpha = 0.82). Discrepancies were resolved by a majority rule, or by the third author in the case of no majority consensus. All variables from "Body Portion" to the end of the table were only coded for the subset of profiles containing a photograph of a human.

Subject of Photo	% of Total	Mean r
Photo of human	95.0 %	.333
Drawing of human	2.0 %	.322
<b>Photo of an animal</b>	0.9 %	.217
Cat	0.2 %	.491
Dog	0.4 %	.162
Other (fish, rabbit, etc.)	0.3 %	.491
Other (building, tractor,	2.2 %	.139
<b>Body Portion</b>	<b>% of Total</b>	<b>Mean r</b>
Face and shoulders	81.2 %	.335
Full body	18.7 %	.329
Body without head	0.1 %	.712
<b>Number of People</b>	<b>% of Total</b>	<b>Mean r</b>
Only one person	84.1 %	.327
Focus on one person, partial	4.6 %	.456
More than one person	10.5 %	.338
Large group (six or more)	.8 %	.218
<b>Location</b>	<b>% of Total</b>	<b>Mean r</b>
Inside	56.3 %	.314
Outside	21.3 %	.384
Not sure	22.4 %	.337
<b>Smile</b>	<b>% of Total</b>	<b>Mean r</b>
Smile with teeth	30.7 %	.369
Smile without teeth	32.8 %	.314
No smile	36.5 %	.316
<b>Eye Covering</b>	<b>% of Total</b>	<b>Mean r</b>
Glasses	12.2 %	.369
Sunglasses	18.2 %	.351
Other eye covering (goggles,	0.7 %	.380
None	68.8 %	.316
<b>Head Covering</b>	<b>% of Total</b>	<b>Mean r</b>
Head covering that fully	6.3 %	.345
Head covering that doesn't	2.2 %	.294
None	91.5 %	.331
<b>Eye Contact</b>	<b>% of Total</b>	<b>Mean r</b>
Looking at camera	68.7 %	.341
Not looking at camera	31.3 %	.319
<b>Weight</b>	<b>% of Total</b>	<b>Mean r</b>
Below subjective mode	3.3 %	.341
Subjective mod	91.1 %	.340
Above subjective mode	5.6 %	.299
<b>Sexual Allure</b>	<b>% of Total</b>	<b>Mean r</b>
Sexual allure (cleavage,	3.7 %	.317
No sexual allure	96.3 %	.335

Table 1. Photo Characteristics, Frequencies, and Mean r.

## Measures

For each dyad, the 40 ratings of the target made by the rater were correlated to calculate the impression agreement using a Pearson  $r$  with the 40 self-ratings that the target made about him or herself. Impression agreement ranges from -1 to +1, and can be interpreted to measure whether the rater sees the target as the target sees themselves. The impression agreement statistic is the dependent variable that will be modeled by the photo elements

## Analysis of Photo Elements

To analyze the photo elements, analysis of covariance (ANCOVA) was conducted where the level of analysis was the dyad, the dependent variable was impression agreement, and the independent variables were the photo characteristics.

All ANCOVA models looked for interactions with the sex of the rater and target, given that previous studies (Watson 1989) have shown interaction effects whereby female raters are generally more accurate and female targets are easier to guess. Several additional variables were covaried out to help isolate the unique relationship between the photo elements and impression agreement. These included: 1) age of the rater and target, 2) the similarity in personality between each dyad's members (as measured by the Pearson  $r$  between the rater's self-ratings and the target's self-ratings) and 3) the extent to which the rater assumed his or her personality was similar to the target's (as measured by the Pearson  $r$  between the rater's impression of the target and the rater's self-ratings - sometimes referred to as projection (John 2005)).

## Results

### Frequency of Photo Characteristics

As seen in Table 1, there was considerable conformity in the profile photos that users uploaded, but also important variability. Most participants uploaded a photo of one person showing the face and shoulders looking at the camera. This distribution may not generalize to other SNWs, because users of YouJustGetMe were motivated to post information that would be useful to others in forming accurate impressions of their personality.

### Overall Impression Agreement

Overall impression agreement was significantly greater than zero (mean  $r = .33$ ;  $p < .001$ ) but also showed considerable variability ( $SD = .29$ ). This level of agreement is comparable to that of randomly-assigned dyads in previous studies (mean  $r = .29$ ) (Evans, Gosling, and Carroll 2008).

### Photo Characteristic Effects

The analysis revealed that raters formed impressions that better agreed with the targets' self-ratings of personality

when the target posted a **photo of a human** ( $r = .33$ ) than when the target posted a drawing of a human ( $r = .32$ ), a photo of an animal ( $r = .22$ ), or a photo of a non-human object ( $r = .14$ ),  $F(3,1051)=2.92$ ,  $p=.03$ . This finding replicates past research on this site (Evans, Gosling, and Carroll 2008).

A significant main effect for **location**,  $F(2,984)=4.35$ ,  $p=.01$ , showed that impression agreement was also higher when the target appeared outside ( $r=.38$ ) than when the target appeared inside ( $r=.31$ ).

A significant interaction of **head covering and target gender**,  $F(2,993)=4.49$ ,  $p=.01$ , showed that impression agreement of specifically male targets was higher when they did not wear head covering ( $r=.48$ ) than when they did, regardless whether their hair was partially ( $r=.22$ ) or fully covered ( $r=.31$ ). The presence or absence of head covering had no differential effect on how women were rated.

A marginally significant main effect for **smiling**,  $F(2,934)=2.36$ ,  $p=.09$ , showed that impression agreement of targets smiling with teeth ( $r=.37$ ) was higher than it was of targets smiling without teeth ( $r=.31$ ) or not smiling ( $r=.32$ ). A marginally significant interaction of **smiling and rater gender**,  $F(2,934)=2.62$ ,  $p=.07$ , qualified this finding. Male raters showed lower agreement when rating targets with no smile ( $r=.26$ ) than did female raters ( $r=.37$ ).

A marginally significant interaction of **number of people and rater gender**,  $F(3,995)=2.49$ ,  $p=.06$ , showed that female raters showed higher impression agreement when rating targets appearing with a group of people ( $r=.35$ ) than did male raters ( $r=.09$ ). Interestingly, both male and female raters were better at rating targets who appeared with other individuals (respective  $r_s=.49,.43$ ), whether partially cropped or fully included in the photo, than targets appearing alone (respective  $r_s=.31,.35$ ).

Finally, a significant interaction of **weight and rater gender**,  $F(2,995)=4.04$ ,  $p=.02$ , showed that men were more accurate at rating targets of below average apparent weight ( $r=.51$ ), than were women ( $r=.18$ ).

No significant main effects or interactions were found involving **body** (face and shoulders, full body, or body without head), **eye covering** (glasses, sunglasses, other eye covering, none), **eye contact** (looking at camera or not looking at camera), or **sexual allure** (some allure, no allure). As well, no differential impression agreement was found depending on the **animal** shown in the photograph (dog, cat, other).

## Discussion

The results were consistent with the literature on interpersonal perception (Zebrowitz and Collins 1997) in that the more information the photos contained about the personality of the profile owners, the higher the impression agreement from zero-acquaintance visitors. Profile photos of a human being rather than an animal or non-human object were associated with higher impression agreement.

Impression agreement was also higher when the photos revealed facial features (such as smiling) and hairstyles (not obscured by hats), which have been shown in past research to be used appropriately to gauge Extraversion and Agreeableness in strangers (Zebrowitz and Collins 1997). The present study extends this literature by showing that photos of people in outdoor locations and with other individuals were also associated with higher impression agreement. It is possible that raters utilize additional context cues gleaned from the outdoor scene or other individuals to refine their judgment of the profile owner's personality. Results suggesting that female raters are more sensitive than male raters to subtle clues conveyed by the profile photographs (including smiling and the presence of others) are also consistent with the literature (Evans, Gosling, and Carroll 2008; Zebrowitz and Collins 1997).

While testing the effects of the profile photographs, we controlled for the age of the rater and profile owner, their personality similarity, and the rater's projection of their personality onto the profile owner. In balancing statistical control and ecological validity, we did not control for any textual information posted on the profiles, which may increase the error term of our models. The associations between photo characteristics and impression agreement reported here were at least robust enough to emerge as significant despite broad variance in the textual assertions that profile owners made about themselves. A future study might compare impression agreement on our relatively controlled site to a site where users freely pick their online photo without instructions to select photos that best communicate their personality.

This research is of practical benefit to social networking website users as they seek to tailor their online profiles to effectively communicate their personal and professional traits. It is also valuable to social networking website creators and designers in helping them to design online profiles that foster a vibrant online community. More generally, this research implies that the processes of interpersonal perception are very much at play in the new medium of online social networking. Future research will examine the apparent racial characteristics of targets, and break down impression agreement across the personality domains of the Five Factor model.

### Acknowledgements

The authors wish to thank Oliver John for providing the BFI-K (Form S). We also wish to thank Anthony Carroll, Peggy Evans Ph.D., Samuel Gosling Ph.D., and Richard Leroy Spencer II for contributions to the design and development of <http://www.YouJustGetMe.com>.

### References

boyd, d & Ellison, N. B. 2007. Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication*, 13,1, 210-230.

Evans, D.C., Gosling, S.D., and Carroll, A. 2008. What elements of an online social networking profile predict target-rater agreement in personality impressions? In *Proceedings of the International Conference on Weblogs and Social Media* (Seattle, Washington, USA, March 31 - April 2, 2008).

[http://www.psychster.com/library/EvansGoslingCarroll\\_ICWSM08.pdf](http://www.psychster.com/library/EvansGoslingCarroll_ICWSM08.pdf)

Funder, D.C. 1999. *Personality judgment: A realistic approach to person perception*. Academic.

Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. C. (2006). The International Personality Item Pool and the future of public-domain personality measures. *Journal of Research in Personality*, 40, 84-96. <http://ipip.ori.org/>

Gosling, S.D., Gaddis, S., and Vazire, S. 2007. Personality impressions based on Facebook profiles. In *Proceedings of the International Conference on Weblogs and Social Media* (Boulder, Colorado, USA, March 26 - 28, 2007). <http://www.icwsm.org/papers/3--Gosling-Gaddis-Vazire.pdf>

Gosling, S.D., Ko, S.J., Mannarelli, T., and Morris, M.E. 2002. A room with a cue: Personality judgments based on offices and bedrooms. *Journal of Personality and Social Psychology* 82, 3 (2002), 379-398.

John, O.P. 2005. BFI-K (Form S). Berkeley: University of California, Berkeley, Institute of Personality and Social Research.

John, O.P and Robins, R.W. 1993. Determinants of interjudge agreement on personality traits: The big five domains, observability, evaluativeness, and the unique perspective of the self. *Journal of Personality*, 61 (1993), 521-551.

Kenny, D.A. 1994. *Interpersonal perception: A social relations analysis*. Guilford Press.

McCrae, R. R., & Costa, P. T., Jr. (1999). A five-factor theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality theory and research* (pp. 139-153). New York: Guilford Press.

Watson, D. 1989. Strangers' ratings of the five robust personality factors: Evidence for a surprising convergence with self-report. *Journal of Personality and Social Psychology*, 57, 1 (July, 1989), 120-128.

Weeks, L. 2009. Social Responsibility And The Web: A Drama Unfolds. NPR. (January 8, 2009). <http://www.msnbc.msn.com/id/20202935/>

Zebrowitz, L.A., and Collins, M.A. 1997. Accurate social perception at zero acquaintance: The affordances of a Gibsonian approach. *Personality and Social Psychology Review*, 1, 3, 204-22