



Shoes as a source of first impressions

Omri Gillath^{a,*}, Angela J. Bahns^b, Fiona Ge^a, Christian S. Crandall^a

^a University of Kansas, Lawrence, KS, United States

^b Wellesley College, Wellesley, MA, United States

ARTICLE INFO

Article history:

Available online 13 April 2012

Keywords:

Person perception
First impression
Shoes
Judgment accuracy
Attachment

ABSTRACT

Surprisingly minimal appearance cues lead perceivers to accurately judge others' personality, status, or politics. We investigated people's precision in judging characteristics of an unknown person, based solely on the shoes he or she wears most often. Participants provided photographs of their shoes, and during a separate session completed self-report measures. Coders rated the shoes on various dimensions, and these ratings were found to correlate with the owners' personal characteristics. A new group of participants accurately judged the age, gender, income, and attachment anxiety of shoe owners based solely on the pictures. Shoes can indeed be used to evaluate others, at least in some domains.

© 2012 Elsevier Inc. All rights reserved.

1. Introduction

Impression formation happens quickly, and has long lasting effects on attitudes, expectations, and behavior (e.g., Ambady & Skowronski, 2008; Funder, 2010; Selfhout, Denissen, Branje, & Meeus, 2009). People need very little information – a mere *thin slice* – to form a judgment. Nevertheless, the consensus and accuracy in people's judgments are quite remarkable (e.g., Ambady & Rosenthal, 1992; Kenny & West, 2008). Using *thin slices* people can generate judgments of others across domains, such as personality, political views, racial biases, and sexual orientation (e.g., Ambady, Bernieri, & Richeson, 2000; Ambady, Hallahan, & Conner, 1999).

Cash and Duncan (1984) suggested that people can obtain these thin slices of information from dynamic and static appearance cues (see also Naumann, Vazire, Rentfrow, & Gosling, 2009). Whereas some research exists on the use of dynamic cues such as posture and facial expressions (e.g., Riggio, Widaman, Tucker, & Salinas, 1991), relatively less was done on the use of static cues (e.g., clothing and shoes). We hence focused on one such cue—people's shoes—as a thin slice of information. Specifically, we examined the ability to accurately judge personality, attitudes, and demographics, based on a picture of one's shoes.

2. Person perception based on limited amount of information

Humans often face situations in which decisions must be made quickly and based on a limited amount of information (Funder,

2010). The speed of the decision or judgment, however, can and often does come at the expense of its accuracy (Busemeyer & Townsend, 1993; Wayne, 1977). Accurate person perception is an important skill for understanding the social world (Asch, 1946). If “perceiving is for doing,” then the ability to form accurate impressions based on limited cues is an adaptive social function (Gibson, 1979). Knowing what someone is like based on their outward appearance can save resources and even one's life by giving him or her cues about potential harm doers (Zebrowitz & Collins, 1997).

Researchers have used different approaches to look into these issues. For example, researchers focusing on *first impressions* made while on a date (e.g., Finkel, Eastwick, & Matthews, 2007), found that even after a relatively short period of conversation (e.g., 3–8 min), people form a quick first impression and use it to decide if they would like to date a person or not. A different line of research based on the *zero-acquaintance* approach, showed that participants are capable of forming accurate impressions even without interacting with the target of evaluation. In such studies (e.g., Albright, Kenny, & Malloy, 1988; Rentfrow & Gosling, 2006), participants receive rich information about the target—such as video clips—conveying information via multidimensional constructs, such as verbal and nonverbal behaviors, even though they are not interacting with the target. Using the information people can evaluate the target's personality, preferences, and attitudes with reasonable accuracy (e.g., Rentfrow & Gosling, 2006; see also Borkenau, Mauer, Riemann, Spinath, & Angleitner 2004).

In a third line of research, which uses the *thin slice* approach, there is usually no interaction with the target, and participants get very little information, often in the form of short observations. Even on the basis of these limited observations, participants can infer the target's state, personality traits, and other characteristics (e.g., Ambady & Rosenthal, 1992; Carney, Colvin, & Hall, 2007).

* Corresponding author. Address: Department of Psychology, University of Kansas, Lawrence, KS 66045-7556, United States. Fax: +1 785 864 5696.

E-mail address: ogillath@ku.edu (O. Gillath).

Not only are judgments in thin slice studies often quite accurate, a meta-analysis of person perception studies (Hall, Andrzejewski, Murphy, Schmid Mast, & Feinstein, 2008) revealed that judgment accuracy was only weakly correlated with stimulus exposure duration, which ranged from 5 s to 45 min. People were nearly as accurate in their judgments based on the shortest time intervals as they were with the longest durations. Brief glances—even one look—seem to provide enough to generate an accurate evaluation. These findings suggest that people can use specific appearance-based cues, which they quickly perceive from the target, to make accurate evaluations.

3. Person perception based on physical appearance

Physical appearance is thought to play a central role in the person perception process (e.g., Cash & Duncan, 1984; Kleinke & Stanek, 1980). To be able to evaluate the unique contribution of physical appearance, however, the amount of information available to the perceiver must be restricted. Most studies reviewed above were conducted using face-to-face interactions or videotaped behaviors, which involve more information about the target than its mere physical appearance. To test the unique contribution of physical appearance participants should be provided with only appearance cues, while eliminating any information embedded in an interaction (e.g., conversation, movement, and smell; Naumann et al., 2009).

Studies focusing on the role of physical appearance usually expose people to two types of cues: (a) static cues, such as clothing and hair style; or (b) dynamic cues, such as facial expressions and posture (e.g., Riggio et al., 1991). These cues, although all related to physical appearance, provide different information and allow for judgment of different characteristics. For example, participants can accurately judge the sexual orientation of others by examining body shape and gait (Johnson, Gill, Reichman, & Tassinari, 2007). Full-body photographs allowed participants to accurately evaluate a target's Big Five personality traits (Naumann et al., 2009). Facial expression (smiling in particular) allowed participants to evaluate extraversion levels (Kenny, Horner, Kashy, & Chu, 1992), and style of dress was found to provide information on conscientiousness levels (Borkenau & Liebler, 1992).

4. The current study

Most studies that found associations between physical appearance cues and raters' judgments used dynamic cues, or a combination of dynamic and static cues (e.g., face and voice; Campanella & Belin, 2007). Face in particular, remains a compelling subject of investigation in this area (Zebrowitz & Montepare, 2008). Therefore, we know relatively little about accuracy based solely on static cues (e.g., photographs, clothes, accessories; but see work by Borkenau and Liebler (1992) and by Zebrowitz [e.g., Zebrowitz & Collins, 1997]). Although clothes may “make the man” (Townsend & Levy, 1990), the empirical basis for the claim is limited. We fill this gap in the literature by presenting cues that eliminate facial expressions and body cues of the targets, presenting only one type of static cues. The goal of the study was to examine the extent to which such a cue by itself contributes to person perception. We chose shoes as a representative of such cues.

Although shoes are usually the single most expensive item in people's outfit, they have received relatively little attention in research. Shoes serve a practical purpose, and also serve as nonverbal cues with symbolic messages. People tend to pay attention to the shoes they and others wear (Zeisl, 1935). Variation in colors, shapes, and styles convey various messages about the shoe owner (such as his/her status or intentions; Rossi, 1976; Smith, 1999).

Jacoby (1971) was able to use shoes as an index of dogmatism and creativity. Although various people have suggested that shoes can reveal information about their owners, such as their sense of security or insecurity (Clark et al., 2011), political ideology (Hunt, 1984; Schroedel & Snyder, 1994), and more recently, friendliness, intelligence, happiness, or being outdoorsy (Winget, 2010), there are actually very little data to support these claims.

One possible framework to explain why shoes might serve as an effective cue about their owners and how observers might use that information to form their impressions is Gosling and colleagues' theory on identity claims and behavioral residue (Gosling, Ko, Mannarelli, & Morris, 2002). Shoes have great variety of styles, brands, looks, and functions. Because of this variety, shoes can carry individual difference information, *but do they?* Adopting Gosling et al.'s (2002) idea of an *identity claim* – a symbol displayed by the owners to reinforce their self-image – we suggest that the answer is yes. For example, people who are extraverted may think black-and-white is dull, and tend to wear more colorful shoes as an expression of their personality. People with higher income may be more likely to wear shoes with high-end brands as a mean to exhibit their social status.

Just as identity claims may serve as direct cues for making judgment about personality characteristics, *behavioral residues* (Gosling et al., 2002) offer indirect hints that can help with the process of impression formation. People with different personalities tend to perform acts that are in line with their corresponding personality traits, leaving traces (behavioral residues) in the environment as evidenced in individual perception. Conscientious people might clean and organize their shoes more regularly; their shoes may possess a newer or tidier look than shoes of others.

Can we use shoes as an example of personally and socially meaningful static cues for accurate person perception? We focused on three research questions: (1) *Inter-observer consensus*: Do independent observers reach similar conclusions about a target's characteristics based on the target's shoes? (2) *Self-other judgment accuracy*: Do observers' impressions provide a valid portrayal of shoe owners' personal characteristics (based on self-other agreement)? (3) *Cues*: Which shoe cues do observers rely on to make judgments about the shoe owners and which shoe cues are valid indicators of the shoe owners' actual personal characteristics?

The first two questions are comparatively straightforward. For the third, we used Brunswik's *Lens Model Framework* (1956). Accurate communication between the environment and the observer requires both (1) the existence of cues as valid indicators of the environment and (2) the observer's appropriate utilization of the cues. The model is well-designed to test interpersonal perception hypotheses (e.g., Gifford, 1994). Past studies using the model (e.g., Back, Schmukle, & Egloff, 2008; Gosling et al., 2002) address three associations (cue utilization, cue validity, and sensitivity) to explain the mechanisms underlying impression formation. In accordance with these studies, our third research question focused on the three aspects of the lens model as they apply to shoes: (a) Which shoe cues are valid indicators of targets' personal characteristics (cue validity)? (b) Which shoe cues do perceivers use to make judgments (cue utilization)? and (c) Are perceivers sensitive to validity differences between shoe cues (sensitivity)?

5. Predictions

5.1. Consensus

Consensus refers to agreement among perceivers, and has been shown to vary across what is rated (e.g., Albright et al., 1988; Kenny, 1994; Paulhus & Bruce, 1992), and the context of the information (e.g., Naumann et al., 2009). Because the mostly

context-free task of rating shoes has almost no research history, our hypotheses are guided by research in the general area of personality perception. Of the Big Five personality factors, the kind of information available from shoes leads us to expect higher consensus for judgments of Conscientiousness and Openness to Experience (e.g., Borkenau & Liebler, 1992).

5.2. Accuracy

We predicted that participants could accurately evaluate shoe owners' basic demographics, such as SES (or annual family income), gender, and age solely based on a picture of their shoes. We also predicted that because people can identify another's personality (e.g., Borkenau & Liebler, 1992; Naumann et al., 2009) and attachment style (e.g., Banai, Weller, & Mikulincer, 1998) by simple observation or from pictures, participants should be able to evaluate shoe owners' Big Five personality dimensions and their attachment style by looking at their shoes (for a similar idea see, Clark et al., 2011).

5.3. Sensitivity

Sensitivity measures the match between cue utilization and cue validity correlations (Borkenau & Liebler, 1992), that is, how sensitive observers were toward using valid cues. In past zero-acquaintance studies, the most accurately judged trait also had the highest sensitivity correlation (Back et al., 2008; Borkenau & Liebler, 1992; Gosling et al., 2002), demonstrating observers' ability to appropriately use valid cues when making judgments. Hence, we expected our results to mirror the pattern of past findings, such that the most accurately judged personal characteristic would correspond to a higher sensitivity correlation, while the least accurately judged personal characteristic would correspond to a lower sensitivity correlation. At the same time, as the level of accuracy was not found to be uniformly matched by sensitivity correlations (Gosling et al., 2002), we expected a general fit of the pattern without a perfect match between accuracy level and sensitivity correlations.

6. Method

Three sources of data were collected: (1) shoe owners' self-report regarding their personality, attachment style, and demographic information (target self-ratings), (2) perceptions of shoe owners based on shoe characteristics by independent judges (observer ratings), and (3) characteristics of shoes (cues).

6.1. Target self-ratings

The "shoe providers" were 208 undergraduate students enrolled in an introductory Psychology course at the University of Kansas. The sample consisted of 98 females and 110 males ranging in age from 18–55 years old ($Mdn = 19$, $SD = 2.86$). Participants were awarded credit for participating in the study as a class activity.

6.1.1. Online questionnaire

Each participant completed a battery of online questionnaires, which were comprised of personality traits, attachment style, and demographic questions. The Big Five personality traits were assessed using the Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003). It measured participants' personality on Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness to Experience. Each item had a 1 (*disagree strongly*) to 7 (*agree strongly*) response scale.

Attachment anxiety and avoidance were assessed using the 12-item short version of the Experience in Close Relationships (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007). The ECR-S has two 6-item subscales evaluating people's attachment anxiety (e.g., "I worry that romantic partners won't care about me as much as I care about them") and avoidance (e.g., "I try to avoid getting too close to my partner"). Each of the 12 items was scored on a 7-point scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). Low scores on both anxiety and avoidance represent attachment security.

Finally, participants answered several demographic questions regarding their age, gender, annual family income (1 = *under \$20K*, 2 = *\$20K–\$39K*, 3 = *\$40K–\$59K*, 4 = *\$60K–\$79K*, 5 = *\$80K–\$99K*, 6 = *\$100K–\$120K*, 7 = *over \$120K*), and political ideology (1 = *conservative*, 4 = *moderate*, 7 = *liberal*). At a different time, participants were asked to submit a digital photograph of "the pair of shoes you wear most often." Following completion, participants were debriefed and thanked.

6.2. Observer ratings

Observers were 63 undergraduate students (29 females, 34 males) recruited via the Psychology subject pool at the University of Kansas, ranging in age from 18–22 years old ($Mdn = 19$, $SD = 0.89$). There was no overlap in the two samples. After consenting, participants looked at shoe pictures presented on a computer screen. They rated the personality, attachment style, political ideology, and demographic dimensions of the unknown shoe owners, based only on a picture of the person's shoes. Participants were informed that the photo represented the pair of shoes the owner wears most often, and were told to "go with your first impression." Questions were shown on the screen one at a time, with the shoe picture remaining visible at all times. A total of 208 pictures had been randomly divided into 21 sets of 10 pictures each (two pictures each appeared in two different sets to hold the length of the experiment constant). Each participant rated one set of pictures, and each set was rated by on average three observers.

The Ten-Item Personality Inventory was again used to assess participants' perceptions of the shoes owners' personality dimensions. We measured adult attachment with the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) originally a four-item self-report scale meant to assess attachment style. In the current paper we modified the RQ so that participants could use it to evaluate shoe owners' attachment anxiety and avoidance. The RQ is shorter, provides convergent validity with the ECR-S used in target self-ratings, and allowed us to test more directly the association between attachment style and shoe characteristics.

Participants were also asked to make their best guess of the age, gender, annual family income and political ideology (same scales as in target self-ratings) of the shoe owners. Finally, they provided their own demographics, and were debriefed and thanked.

6.3. Shoe cues

A coding scheme was developed to rate the pictures of shoes. Three of the authors reviewed the shoes and independently identified domains on which the shoes could be rated. A list of 17 dimensions of shoe ratings were selected: heel height (0 = *no heel/flats*, 1 = *medium heels*, 2 = *high heels*), shoe height (0 = *low top*, 1 = *high top*), gender of owner (1 = *definitely male*, 4 = *cannot tell*, 7 = *definitely female*), whether or not the person was wearing the shoes in the photo (0 = *not wearing shoes*, 1 = *wearing shoes*), brightness (1 = *dull*, 7 = *bright*), colorfulness (1 = *neutral*, 7 = *colorful*), brand (1 = *brand name is visible*, 0 = *brand name is not visible*), repair (1 = *bad repair*, 7 = *good repair*), newness (1 = *look brand new*, 0 = *do not look brand new*), price (1 = *looks cheap*, 7 = *looks expensive*), comfort (1 = *looks*

Table 1

Judgments based on shoes: consensus, accuracy, and vector correlations.

Personality or demographic variable	Interobserver consensus (<i>N</i> = 208)	Observer accuracy		Vector correlations (<i>N</i> = 17)
		Zero-order (<i>N</i> = 208)	Partial correlations (<i>N</i> = 174)	
Age	.07 [*]	.19 ^{**}	^a	.35
Gender	.48 ^{***}	.60 ^{***}	^a	.96 ^{***}
Income	.06	.24 ^{***}	^a	.63 ^{**}
Politics	.13 ^{**}	.04	−.01	.52 [*]
Attachment anxiety	.09 [*]	.16 [*]	.17 ^{**}	.35
Attachment avoidance	.06	.05	.01	.36
Extraversion	.13 ^{**}	−.08	−.06	−.34
Agreeableness	.15 ^{***}	.14 [*]	.04	.53 [*]
Conscientiousness	.11 ^{**}	−.04	−.05	.11
Emotional stability	.00	.09	.10	.28
Openness to experience	.10 ^{**}	.06	.06	.53 [*]

Note: Interobserver consensus is the intraclass correlation that represents the individual judge agreement between the set of observers ($n_j = 2, 3, 4$, or 8) that rated each shoe photo. Observer accuracy is the correlation between the aggregated observer ratings and the self-ratings of shoe owners. The vector correlations reflect the convergence between the cue-utilization correlations and the cue-validity correlations.

^a Control variable in partial correlation analysis (aggregated observer ratings).

^{*} $p < .05$, one-tailed.

^{**} $p < .01$, one-tailed.

^{***} $p < .001$, one-tailed.

uncomfortable, 7 = looks comfortable), attractiveness (1 = ugly, 7 = attractive), stylishness (1 = not stylish, 7 = stylish), toe shape (0 = round, 1 = pointy), number of shoes pictured (1 = just one shoe, 2 = both shoes of the pair), commercial image (1 = yes, a commercial image was submitted, 0 = no, a commercial image was not submitted), background of the picture (1 = dull, 7 = colorful). Next, two independent raters rated each shoe picture (208 in total) on the 17 dimensions mentioned above. Interrater reliability was established by intraclass correlation for the 9 continuous shoe dimensions (mean ICC = .54, with 8 of 9 correlations reaching significance at the .001 level) and by percent agreement for the categorical shoe dimensions (mean percent agreement 92.85%).

7. Results

7.1. Question 1: Interobserver consensus

To test whether observers would agree about the shoe owners' personalities, attachment anxiety and avoidance, and demographic variables, we calculated the intraclass correlation¹ (ICC) among the set of observers rating each photo using a one-way random effects model and reporting the individual judge agreement for each. Across all eleven dimensions, the mean ICC was positive and significant ($r = .12$). The ICCs for each dimension are shown in the first column of Table 1. Observers reached the highest level of consensus in making judgments of shoe owners' gender. Consensus was positive and significant for 4 of the 5 Big Five personality traits, as well as for attachment anxiety and political beliefs.

We found relatively high consensus among observer's ratings of Conscientiousness, Agreeableness, Openness to Experience and Extraversion. In contrast to typical zero-acquaintance research (e.g., Kenny et al., 1994), our data suggest that shoes present a unique source of information that allows a high level of agreement among observers on judgments of Agreeableness. The relatively high consensus we found for Extraversion is inconsistent with previous research that suggests dynamic cues are needed to inform this judgment (e.g., Gosling et al., 2002; Kenny et al., 1994). Our findings indicate that shoes provide information that allows observers to reach consensus on a wide range of characteristics including a target's gender, personality traits (except for Emotional Stability),

political beliefs, and attachment anxiety. The findings for political beliefs and attachment anxiety are, to our knowledge, new.

7.2. Question 2: Judgment accuracy

We calculated observer accuracy by correlating target self-ratings with the aggregated (average) observer ratings. The aggregate of observer ratings is our most reliable measure of the inferences people make based on a person's shoes (Block, 1961), although the pattern of findings is nearly identical when the analysis is done at the individual level. We predicted that observers would make accurate judgments on nearly all the measures based solely on a picture of the target's shoes. As expected, the accuracy correlations were largely positive (9 of 11 dimensions), although only 5 of 11 correlations were significant. The mean accuracy across all dimensions was $r = .17$; driven primarily by accuracy for demographic variables.

The accuracy correlations are presented in columns 2 and 3 of Table 1. Column 2 shows the zero-order correlations between target self-ratings and the aggregate observer ratings; column 3 shows the partial correlations controlling for observer ratings of age, gender, and income. Accuracy was highest for age, gender, and income, followed by attachment anxiety and Agreeableness. Accuracy was very low for judgments of personality traits (with the exception of Agreeableness). Additionally, we found new evidence that attachment anxiety can be accurately inferred based on a person's shoes.

As accuracy for demographic variables was high, we wanted to test whether people are first making inferences about a target's age, gender, and income and then using these inferences as a "stereotypic" basis for judgments of personality and attachment. To test for this possibility we calculated the partial correlations of target self-ratings and aggregate observer ratings controlling for perceived age, income, and gender. The correlation for Agreeableness was no longer significant, which suggests that stereotypes may account for the accuracy observers achieve on this trait. By contrast, however, the correlation for attachment anxiety was even stronger and more significant after controlling for gender, age, and income; hence accuracy in judgments of attachment anxiety based on a person's shoes cannot be explained entirely by stereotype use.

7.3. Question 3: Cues

Next we conducted a series of analyses in accordance with Brunswick's (1956) lens model framework, to determine (a) which

¹ We used the weighting method for the case of unequal group sizes suggested by Snijders and Bosker (1999, p. 19) to estimate the between-group variances.

Table 2

A Brunswick (1956) lens model analysis of judgments based on shoes: cue-utilization correlations.

Shoe cues	Cue-utilization correlations										
	Anx.	Avoid.	Extra.	Agree.	Cons.	Em. St.	Open.	Polit.	Age	Gender	Inc.
Attract.	.03	-.14*	.02	.01	.21**	.05	-.00	-.17*	-.05	.06	.40***
Stylish.	.03	-.15*	.05	.03	.13	-.02	.05	-.11	-.13	.15*	.39***
Toe Shp.	.05	.15*	-.16*	-.16*	.03	-.17*	-.04	-.21**	.03	.00	.08
Heel	-.02	.08	-.08	-.12	-.01	-.19**	-.03	-.11	-.02	.13	.14*
Comfort	-.07	-.03	.13	-.01	.03	.08	-.01	-.06	-.06	-.20**	.05
New	.15*	-.07	-.02	-.02	.09	-.01	.12	-.10	-.03	-.02	.32***
Comm.	.07	-.01	.04	-.10	.07	-.08	.04	-.08	.03	-.07	.15*
Repair	.20**	-.04	-.02	-.01	.14*	-.09	.09	-.15*	-.03	.04	.30***
Numb.	.02	-.09	-.09	.10	-.01	.16*	-.09	.05	-.05	.14	-.10
Masc.	-.04	.22**	-.11	-.23***	-.08	.10	-.14*	-.08	-.01	-.61***	-.20**
Price	-.00	.08	.07	-.25***	.08	-.05	-.03	-.22**	-.03	-.28***	.17*
Hi-Top	.01	.15*	.10	-.31***	-.14*	-.20**	.03	.06	-.07	-.14*	-.10
Brand	-.22**	.01	.16*	-.17*	-.09	.00	.07	-.08	-.11	-.30***	.05
Worn	-.03	.04	-.07	.11	.08	.16*	.09	.04	-.07	.06	.10
Bckgrnd.	-.03	-.07	.06	.09	.07	.04	.16*	.09	-.00	.09	.11
Colorful	-.00	-.09	.20**	-.07	-.04	-.15*	.22**	.07	-.14*	.12	.12
Bright	-.07	-.02	.19***	-.02	.06	-.07	.17*	-.00	-.07	-.00	.20**

Note. Italicized values remained significant after controlling for aggregate observer ratings of age, gender and income. Anx., Attachment anxiety; Avoid., Attachment avoidance; Extra., Extraversion; Agree., Agreeableness; Cons., Conscientiousness; Em. St., Emotional Stability; Open., Openness to Experience; Polit., Liberal political beliefs; Inc., Income; Attract., Attractive (vs. unattractive); Stylish, Stylish (vs. not stylish); Toe Shp., Toe shape (pointy vs. round). Heel, High heels (vs. low heels/flats); Comfort, Comfortable (vs. uncomfortable); New, Looks (vs. does not look) brand new; Comm., Commercial photo (vs. amateur photo); Numb., Number of shoes pictured (one or two); Masc., Looks masculine (vs. feminine); Price, Looks expensive (vs. cheap); Hi-Top, High-top (vs. low-top); Brand, Brand name visible (vs. not visible); Worn, Person is (vs. is not) wearing the shoes in the photo; Bckgrnd., Colorful (vs. dull) photo background; Colorful, Shoes are colorful (vs. neutral); Bright, Shoes are bright (vs. dull).

* $p < .05$, two-tailed.** $p < .01$, two-tailed.*** $p < .001$, two-tailed.

shoe cues observers rely on to make judgments of the shoe owners' characteristics and demographic variables, and (b) which shoe cues are valid indicators.

7.3.1. Cue utilization

The cue-utilization correlations in Table 2 show the associations between the aggregated observers' ratings and the coded dimensions of the shoe photographs. Of 187 correlations, 50 (26.7%) were significant at $p < .05$, which substantially exceeds chance. The significant correlations indicate which shoe characteristics observers may have used as a lens through which they made inferences about the target's personal characteristics.²

Do the associations between shoe cues and personality dimensions seem plausible? Attachment anxiety is associated with fear of being abandoned and rejected (e.g., DeWall et al., 2012). Therefore, it is reasonable for observers to assume that a highly anxious person would carefully manage his or her public image in order to avoid rejection. The cue-utilization correlations indicate that observers did use these kinds of cues to infer attachment anxiety, which was correlated with shoes looking brand new and in good repair. Attachment avoidance is associated with compulsive self-reliance (Bowlby, 1982). Observers might assume that highly avoidant people care less about what others think of their appearance. Indeed attachment avoidance was negatively correlated with attractive and stylish shoes.

Extraversion is associated with gregariousness, talkativeness, and assertiveness; observers associated colorful and bright shoes with extraverted people. Agreeableness is associated with friendliness, generosity, helpfulness, and modesty; it was negatively correlated with pointy toes, price, and brand visibility (signs of practical and affordable shoes). Conscientiousness is associated with carefulness, organization, and self-discipline; it positively correlated with attractiveness and good repair (signs of neat and

well-kept shoes). Emotional Stability is associated with calmness, and being even-tempered and relaxed; it negatively correlated with pointy toes and high heels (signs of formal and uncomfortable shoes). Openness is associated with imagination, aesthetic sensitivity, and preference for variety; it correlated with colorfulness of the photo background, the shoes themselves, and their brightness. College students who are politically liberal are often stereotyped as poor "hippies;" in line with this perception, liberal political ideology was negatively correlated with attractiveness, pointy toes, good repair, and price.

7.3.2. Stereotype use

In order to test whether age, gender, or income stereotypes accounted for the pattern of cue-utilization correlations we found, we computed partial correlations controlling for perceived age, gender, and income. Of 154 correlations, 24 (15.6%) were significant, which is notably fewer than the initial analysis of zero-order correlations (26.7% were significant). This suggests that observers may have to some extent relied on stereotypes of age, gender and income in order to make judgments of the shoe owners' personalities, politics, and attachment. Perceived age, gender, and income appear to have had the greatest effect on observer ratings of attachment avoidance and Conscientiousness. This suggests that it is unlikely that specific shoe characteristics are directly used to make inferences about Conscientiousness or attachment avoidance, but rather that these inferences might be mediated by perceived age, gender and income. The pattern of cue-utilization correlations identified for attachment anxiety, Extraversion, Agreeableness, Emotional Stability, Openness, and political ideology remained largely the same after controlling for demographic variables. This suggests that observers are likely using specific shoe cues as lenses to make direct inferences about these personal characteristics of the shoe owners.

7.3.3. Cue validity

The cue-validity correlations in Table 3 show the associations between the target self-ratings and the coded dimensions of the

² The same analysis was also run at the individual judge level. All significant cue-utilization correlations at the average judge level were replicated at the individual judge level.

Table 3
A Brunswik (1956) lens model analysis of judgments based on shoes: cue-validity correlations.

Shoe cues	Cue-validity correlations										
	Anx.	Avoid.	Extra.	Agree.	Cons.	Em. St.	Open.	Polit.	Age	Gender	Inc.
Attract.	.11	.00	.11	–.02	–.07	–.02	.04	–.06	–.04	.01	.16*
Stylish.	.03	–.04	.11	.09	–.02	–.01	.09	.01	–.03	.14*	.21**
Toe Shp.	–.01	–.03	.02	.09	–.11	.05	.03	–.04	–.02	.13	–.06
Heel	–.03	–.03	.07	.08	.03	.06	.03	–.11	–.02	.08	.02
Comfort	–.04	.11	–.09	–.11	.00	.08	–.09	–.12	–.06	–.17*	.04
New	–.06	.06	–.07	–.06	.05	–.01	–.01	–.12	.06	.03	–.01
Comm.	–.02	.14*	–.08	–.14*	–.09	–.06	.00	–.10	.04	–.04	.06
Repair	.07	.10	–.10	.01	–.01	–.01	–.05	–.05	.08	.07	–.01
Numb.	.04	.03	–.08	.04	–.04	–.05	–.06	.03	.07	.11	–.11
Masc.	.04	.14	–.11	–.16*	–.09	.15*	–.11	–.08	.04	–.67***	.04
Price	.08	.08	–.10	–.13	–.10	.07	–.04	–.13	.02	–.19**	.04
Hi-Top	.06	.15*	–.18*	–.14*	–.21**	–.07	–.11	–.01	.03	–.15	–.13
Brand	–.08	.01	–.06	–.06	.11	.16*	–.05	–.11	–.04	–.16*	.02
Worn	–.14*	.01	.18**	.05	.04	.20**	.08	–.12	–.07	.03	.06
Bckgrnd.	–.05	.04	.04	.04	.18*	.10	.13	.08	–.07	.14*	.01
Colorful	–.17*	–.05	–.09	.14	.11	.13	.09	.03	–.05	.15*	–.04
Bright	–.08	.12	–.09	–.03	.00	.07	–.02	–.07	–.12	.08	.02

Note: Italicized values remained significant after controlling for self-ratings of age, gender, and income; Anx., Attachment anxiety; Avoid., Attachment avoidance; Extra., Extraversion; Agree., Agreeableness; Cons., Conscientiousness; Em. St., Emotional Stability; Open., Openness to Experience; Polit., Liberal political beliefs; Inc., Income; Attract., Attractive (vs. unattractive); Stylish, Stylish (vs. not stylish); Toe Shp., Toe shape (pointy vs. round); Heel, High heels (vs. low heels/flats); Comfort, Comfortable (vs. uncomfortable); New, Looks (vs. does not look) brand new; Comm., Commercial photo (vs. amateur photo); Numb., Number of shoes pictured (one or two); Masc., Looks masculine (vs. feminine); Price, Looks expensive (vs. cheap); Hi-Top, High-top (vs. low-top); Brand, Brand name visible (vs. not visible); Worn, Person is (vs. is not) wearing the shoes in the photo; Bckgrnd., Colorful (vs. dull) photo background; Colorful, Shoes are colorful (vs. neutral); Bright, Shoes are bright (vs. dull).

* $p < .05$, two-tailed.

** $p < .01$, two-tailed.

*** $p < .001$, two-tailed.

shoe photographs. Of 187 correlations, 23 (12.3%) were significant at $p < .05$, exceeding chance. The relatively smaller number of significant cue-validity correlations suggests that in many cases, these inferences were not accurate. Additionally, a comparison of the cue-utilization and cue-validity correlations reveals that in many cases observers failed to utilize specific shoe characteristics as valid cues for personality, attachment, politics, or demographics. Of the 23 significant cue-validity correlations, 12 were appropriately utilized by observers.

7.3.4. Sensitivity

The vector correlations reported in the fourth column of Table 1 provide a more formal test of the extent to which the pattern of cue-utilization matched the pattern of cue-validity (see Funder & Sneed, 1993). First, we transformed the cue-utilization and cue-validity correlations using Fisher's r -to- z formula. Next, we correlated the transformed correlations across the shoe cues for each of the 11 personal characteristics.

If the shoe characteristics accounted for observers' accuracy, then the vector correlations should be the highest for the dimensions that were highest in accuracy. The most accurately judged personal characteristics were age, gender, and income, which also corresponded to relatively strong vector correlations. The most accurately judged personality dimensions were attachment anxiety and Agreeableness, which also had relatively strong vector correlations.

7.3.5. Mediating role of shoe characteristics in self-other agreement

We tested the assumed mediating role of shoe characteristics in explaining the accuracy of observer ratings using path analysis. Of the domains in which observer ratings were accurate, we identified subsets of shoe cues that were significantly related to both self-ratings and observer ratings for Agreeableness, gender, and income. We used the Preacher and Hayes (2008) multiple mediation procedure to test each subset of shoe cues that were significantly correlated with self-ratings and observer ratings as potential mediators

of the effect of self-ratings on observer ratings. We tested separate multiple mediator models for Agreeableness, gender, and income.

Shoe owners' self-ratings of Agreeableness were significantly related to the masculinity ($B = -.30$, $p = .02$) and shoe height (high-top vs. low-top; $B = -.04$, $p < .05$) of their shoes, and these shoe cues were also significantly related to observer ratings of Agreeableness ($B_s = -.06$, $-.59$, $ps = .02$, $.0001$, respectively). Furthermore, the relationship between self-ratings and observer ratings ($B = .10$, $p = .04$) was no longer significant after controlling for shoe masculinity and shoe height ($B = .06$, $p = .22$). The results with 1000 bootstrap samples indicated that the total indirect effect of self-ratings on observer ratings through shoe cues was significant, with a 95% confidence interval of .01 to .08. Self-ratings of Agreeableness were associated with shoe owners selecting shoes with certain characteristics, and these characteristics in turn helped observers to make accurate judgments of Agreeableness.

Gender of shoe owners was significantly related to the stylishness ($B = .32$, $p = .04$), comfort ($B = -.39$, $p = .02$), masculinity ($B = -2.63$, $p < .00005$), and price ($B = -.51$, $p = .01$) of their shoes, and these shoe cues were related to observer perceptions of gender ($B_s = -.04$, $.02$, $-.07$, $-.06$, $ps = .04$, $.26$, $.00001$, $.01$, respectively). The results with 1000 bootstrap samples indicated that the total indirect effect of self-ratings on observer ratings through shoe cues was significant, with a 95% interval of .14 to .32. Actual gender of the shoe owners was related to the characteristics of the shoes they wore, and these shoe characteristics in turn accounted for observers' ability to accurately perceive gender.

Actual income of shoe owners was significantly related to the attractiveness ($B = .10$, $p = .02$) and stylishness ($B = .12$, $p = .005$) of their shoes, and these shoe cues were related to observer ratings of income ($B_s = .16$, $.11$, $ps = .008$, $.10$, respectively). The results with 1000 bootstrap samples indicated that the total indirect effect of self-ratings on observer ratings through shoe cues was significant, with a 95% confidence interval of .01 to .06. Actual income of the shoe owners was related to the looks of the shoes they wore, and these shoe cues in turn accounted for observers' ability to accurately infer the owner's income.

7.3.6. Differences in shoes based on age, gender, and income

Because shoe characteristics might vary considerably with respect to the age, gender, and income of the shoe owner, it is possible that cue-validity correlations would be different after controlling for these demographic variables. To test for this possibility, we re-calculated the cue-validity correlations as partial correlations controlling for target self-ratings of age, gender and income. Of 154 correlations, only 7 (4.5%) were significant, which is what we would expect by chance alone. This analysis suggests that specific shoe characteristics may not be directly related to personal characteristics but rather are indirectly related to personal characteristics based on age, gender, and income. It is important to note that these findings do not suggest that shoes are only related to stereotypical views (e.g., women are agreeable) of their owners, but rather that they reflect true variance in those personal characteristics that co-vary with age, gender, and income. In other words, seeing a pair of women's shoes does not suggest that the owner is agreeable merely because women are stereotypically more agreeable than men; women's shoes are perceived to indicate agreeableness because women actually were more agreeable than men in the current sample.

8. Discussion

Previous research on thin slices of information has found that minimal cues are sufficient for perceivers to accurately judge another person's personal characteristics. The current study extends the existing findings by focusing on the associations between shoes and person perception. We tested for accuracy in person perception based on the shoes the person wears, and found people do use shoes to judge others' characteristics, but these inferences are not always accurate.

Observers agreed on many of the shoe owner characteristics, and they were reasonably accurate; observer ratings were correlated with the shoe owners' self-ratings. Because the individuating information is partially redundant with gender, age, and income, the exact pathways are not fully specified. When shared variance with these category variables is removed, only attachment anxiety showed specific accuracy. Finally, we had plenty of support for cue utilization—many of the aggregated observers' ratings were related to the coded dimensions of the shoe photographs. We also had some support for the sensitivity of observers to valid cues—that is, a few dimensions showed significant overlap between cues being used and cues being valid sources of that information. Together these findings suggest that shoe cues are accurate sources of information (on things such as politics, Agreeableness, and Openness) and observers recognize them as such.

In making inferences based on shoe characteristics, three interesting patterns emerged: Some real personal characteristics were accurately perceived by others, e.g., owners who wear masculine or high top shoes tend to be less agreeable. Some of the accurate information that shoes carry (as revealed by cue-validity correlations in Table 3) were not perceived by others (as shown in cue-utilization correlations in Table 2), e.g., people high in attachment anxiety were more likely to have dull shoes, but our participants didn't recognize this cue. Finally, some personal characteristics that were not true to the shoe owners were stereotypically identified by others, e.g., participants assumed that people who wear more attractive and well-kept shoes tend to be more conscientious, but attractiveness and repair of shoes were not related to observer ratings of Conscientiousness after controlling for perceived gender, age, and income. By examining the three patterns, we concluded that attractiveness and comfort of shoes are a particularly interpretable reflection of the owner's personal characteristics. People seeking to make accurate judgments about college students from their footwear should pay attention to these cues.

Our analysis yielded little significant self-other agreement on the Big-Five personality dimensions and attachment avoidance. This is in line with previous research showing that expressive dynamic cues result in more accurate personality judgments (Albright et al., 1988). Being in the physical presence of a target reveals more personality information than only observing a photograph of the same target, and seeing someone's shoes alone is even further degraded information. Some personality traits, such as Emotional Stability and Conscientiousness, are less observable in nature, and often require extensive scrutiny on part of the observer (Ambady, Hallahan, & Rosenthal, 1995). The limited cues provided in the current study prevented participants from accessing such specific information, which in turn lessened the accuracy level.

Interestingly, people could accurately detect attachment anxiety, but not attachment avoidance. People with anxious orientation constantly desire caring and attention. One strategy for achieving attention is to decorate oneself in an expressive way, so that others would easily detect one's style. Thus, it is possible that anxiously attached people tend to wear shoes that are more in line with their personal characteristics, which makes them more observable and means they will more easily stand out. People with avoidant attachment, on the other hand, are aloof and repressive in regulating their emotions and relationships with others. Given that they generally do not care about how others perceive them, it is less likely that their shoes would reveal something about who they are (Banai, Mikulincer, & Shaver, 2005).

8.1. Limitations

The sample we used had limited variability in terms of participants' demographic information, such as age and ethnicity. Almost all participants were college students ranging from 18 to 22 years old. Some latent commonalities might be imbedded in this particular generation which contributed to their shared judgment. Nevertheless, age was observable based on shoe photographs. Still, the interpretability of clothing and shoes is almost certainly limited to ingroup members—cross-cultural interpretation of personality from styles of dress might be wildly inaccurate.

9. Conclusion

People use shoes to infer others' characteristics. Owners wear shoes that present a public image—but that image differs substantially from what they tell us with questionnaires. Observers generally pick up on the image the shoe wearer is conveying, but in doing so they might be fooled. Yet unless a shoe owner purposefully generates a deceptive image, shoes can be a reliable source of information. We do not yet know whether the mismatch between self-other ratings is due to the lack of information in shoes, or whether observers may know something truer (or merely something else) about the shoes owner's characteristics than the owner him/her-self. Do people buy and wear shoes strategically to portray an image, and can observers detect the “acquired image?” These are fundamental questions in personality and social psychology, and they play out in many domains—shoes are merely one attractive alternative to research.

Acknowledgment

The authors would like to thank Eylon Javetz and Ludwin Molina for their help.

References

- Albright, L., Kenny, D. A., & Malloy, T. E. (1988). Consensus in personality judgments at zero acquaintance. *Journal of Personality and Social Psychology*, 55, 387–395.

- Ambady, N., Bernieri, F. J., & Richeson, J. A. (2000). Toward a histology of social behavior: Judgmental accuracy from thin slices of the behavioral stream. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 201–271). San Diego, CA: Academic Press.
- Ambady, N., Hallahan, M., & Conner, B. (1999). Accuracy of judgments of sexual orientation from thin slices of behavior. *Journal of Personality and Social Psychology*, 77, 538–547. <http://dx.doi.org/10.1037/0022-3514.77.3.538>.
- Ambady, N., Hallahan, M., & Rosenthal, R. (1995). On judging and being judged accurately in zero-acquaintance situations. *Journal of Personality and Social Psychology*, 69, 518–529.
- Ambady, N., & Rosenthal, R. (1992). Thin slices of expressive behavior as predictors of interpersonal consequences: A meta-analysis. *Psychological Bulletin*, 111, 165–181.
- Ambady, N., & Skowronski, J. J. (Eds.). (2008). *First impressions*. New York: Guilford.
- Asch, S. E. (1946). Forming impressions of personality. *The Journal of Abnormal and Social Psychology*, 41, 258–290.
- Back, M. D., Schmukle, S. C., & Egloff, B. (2008). How extraverted is honey.bunny77@hotmail.de? Inferring personality from e-mail addresses. *Journal of Research in Personality*, 42, 1116–1122.
- Banai, E., Mikulincer, M., & Shaver, P. R. (2005). “Selfobject” needs in Kohut’s Self Psychology: Links with attachment, self-cohesion, affect regulation, and adjustment. *Psychoanalytic Psychology*, 22, 224–260.
- Banai, E., Weller, A., & Mikulincer, M. (1998). Interjudge agreement in evaluation of adult attachment style: The impact of acquaintanceship. *British Journal of Social Psychology*, 37, 95–109.
- Bartholomew, L., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, 61, 226–244.
- Block, J. (1961). *The Q-sort method in personality assessment and psychiatric research*. Springfield, IL: Charles C. Thomas.
- Borkenau, P., & Liebler, A. (1992). Trait inferences: Sources of validity at zero-acquaintance. *Journal of Personality and Social Psychology*, 62, 645–657.
- Borkenau, P., Mauer, N., Riemann, R., Spinath, F. M., & Angleitner, A. (2004). Thin slices of behavior as cues of personality and intelligence. *Journal of Personality and Social Psychology*, 86, 599–614.
- Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry*, 52, 664–678.
- Brunswick, E. (1956). *Perception and the representative design of experiments*. Berkeley, CA: University of California Press.
- Bussemeyer, J. R., & Townsend, J. T. (1993). Decision field theory: A dynamic cognitive approach to decision making. *Psychological Review*, 100, 432–459.
- Campanella, S., & Belin, P. (2007). Integrating face and voice in person perception. *Trends in Cognitive Sciences*, 11, 635–643.
- Carney, D. R., Colvin, C. R., & Hall, J. A. (2007). A thin slice perspective on the accuracy of first impressions. *Journal of Research in Personality*, 41, 1054–1072.
- Cash, T. F., & Duncan, N. C. (1984). Physical attractiveness stereotyping among Black American college students. *The Journal of Social Psychology*, 122, 71–77.
- Clark, M. S., Greenberg, A., Hill, E., Lemay, E. P., Clark-Polner, E., & Roosth, D. (2011). Heightened interpersonal security diminishes the monetary value of possessions. *Journal of Experimental and Social Psychology*, 47, 359–364.
- DeWall, C. N., Masten, C. L., Powell, C., Combs, D., Schurtz, D. R., & Eisenberger, N. I. (2012). Do neural responses to rejection depend on attachment style? An fMRI study. *Social Cognitive and Affective Neuroscience*, 7(2), 184–192. <http://dx.doi.org/10.1093/scan/nsq107>.
- Finkel, E. J., Eastwick, P. W., & Matthews, J. (2007). Speed-dating as an invaluable tool for studying romantic attraction: A methodological primer. *Personal Relationships*, 13, 149–166.
- Funder, D. C. (2010). *The personality puzzle* (5th ed.). NY: W.W. Norton & Company, Inc.
- Funder, D. C., & Sneed, C. D. (1993). Behavioral manifestations of personality: An ecological approach to judgmental accuracy. *Journal of Personality and Social Psychology*, 64, 479–490.
- Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston, MA: Houghton, Mifflin, and Company.
- Gifford, R. (1994). A lens-mapping framework for understanding the encoding and decoding of interpersonal dispositions in nonverbal behavior. *Journal of Personality and Social Psychology*, 66, 398–412.
- Gosling, S. D., Ko, S. J., Mannarelli, T., & Morris, M. E. (2002). A room with a cue: Personality judgments based on offices and bedrooms. *Journal of Personality and Social Psychology*, 82, 379–398.
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, 37, 504–528.
- Hall, J. A., Andrzejewski, S. A., Murphy, N. A., Schmid Mast, M., & Feinstein, B. A. (2008). Accuracy of judging others’ traits and states: Comparing mean levels across tests. *Journal of Research in Personality*, 42, 1476–1489.
- Hunt, L. (1984). *Politics, culture, and class in the French revolution*. Berkeley: University of California Press.
- Jacoby, J. (1971). Personality and innovation proneness. *Journal of Marketing Research*, 8, 244–247.
- Johnson, K. L., Gill, S., Reichman, V., & Tassinari, L. G. (2007). Swagger, sway, and sexuality: Judging sexual orientation from body motion and morphology. *Journal of Personality and Social Psychology*, 93, 321–334.
- Kenny, D. A. (1994). *Interpersonal perception: A social relations analysis*. New York, NY: Guilford Press.
- Kenny, D. A., Albright, L., Malloy, T. E., & Kashy, D. A. (1994). Consensus in interpersonal perception: Acquaintance and the Big Five. *Psychological Bulletin*, 116, 245–258.
- Kenny, D. A., & West, T. V. (2008). Zero-acquaintance. Definitions, statistical model, findings, and process. In N. Ambady, & J. J. Skowronski (Eds.), *First impressions* (pp. 129–146). New York, NY: Guilford Press.
- Kenny, D. A., Horner, C., Kashy, D. A., & Chu, L. (1992). Consensus at zero acquaintance. Replication, behavioral cues, and stability. *Journal of Personality and Social Psychology*, 62, 88–97.
- Kleinke, C. L., & Staneski, R. A. (1980). First impressions of female bust size. *The Journal of Social Psychology*, 110, 129–134.
- Naumann, L. P., Vazire, S., Rentfrow, P. J., & Gosling, S. D. (2009). Personality judgments based on physical appearance. *Personality and Social Psychology Bulletin*, 35, 1661–1671.
- Paulhus, D. L., & Bruce, M. N. (1992). The effect of acquaintanceship on the validity of personality impressions: A longitudinal study. *Journal of Personality and Social Psychology*, 63, 816–824.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavioral Research Methods*, 40, 879–891.
- Rentfrow, P. J., & Gosling, S. D. (2006). Message in a Ballad: The role of music preferences in interpersonal perception. *Psychological Science*, 17, 236–242.
- Riggio, R. E., Widaman, K. F., Tucker, J. S., & Salinas, C. (1991). Beauty is more than skin deep: Components of attractiveness. *Basic and Applied Social Psychology*, 12, 423–439.
- Rossi, W. A. (1976). *The sex life of the foot and shoe*. Malabar, FL: Krieger.
- Schroedel, J. R., & Snyder, B. (1994). The mom in tennis shoes goes to the senate. In E. A. Cook, S. Thomas, & C. Wilcox (Eds.), *The year of the woman: Myth and realities*. Boulder, CO: Westview Press.
- Selfhout, M., Denissen, J., Branje, S., & Meeus, W. (2009). In the eye of the beholder: Perceived, actual, and peer-rated similarity in personality, communication, and friendship intensity during the acquaintanceship process. *Journal of Personality and Social Psychology*, 96, 1152–1165.
- Smith, E. O. (1999). High heels and evolution: Natural selection, sexual selection, and high heels. *Psychology Evolution, and Gender*, 1, 245–277.
- Snijders, T., & Bosker, R. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. Thousand Oaks, CA: Sage.
- Townsend, J. M., & Levy, G. D. (1990). Effects of potential partners’ physical attractiveness and socioeconomic status on sexuality and partner selection. *Archives of Sexual Behavior*, 19(2), 149–164. <http://dx.doi.org/10.1007/BF01542229>.
- Wayne, A. W. (1977). Speed-accuracy tradeoff and information processing dynamics. *Acta Psychologica*, 41, 67–85. [http://dx.doi.org/10.1016/0001-6918\(77\)90012-9](http://dx.doi.org/10.1016/0001-6918(77)90012-9).
- Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The experiences in close relationship scale (ECR)-short form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, 88, 187–204.
- Winget, A. (2010). Your shoes, your personality. In *Free article directory*. <http://www.narticle.com/your-shoes-your-personality/>.
- Zebrowitz, L. A., & Collins, M. A. (1997). Accurate social perception at zero acquaintance. The affordances of a Gibsonian approach. *Personality and Social Psychology Review*, 1, 204–233. http://dx.doi.org/10.1207/s15327957pspr0103_2.
- Zebrowitz, L. A., & Montepare, J. M. (2008). First impressions from facial appearance cues. In N. Ambady & J. J. Skowronski (Eds.), *First impressions* (pp. 171–204). New York, NY: The Guilford Press.
- Zeisl, H. (1935). The psychology of the shoe-buyer. In *Conférence Internationale desychotechnique* (pp. 196–200), Prague.