First Impressions From Faces

Leslie A Zebrowitz[1]
Brandeis University

Abstract

Although cultural wisdom warns 'don't judge a book by its cover,' we seem unable to inhibit this tendency even though it can produce inaccurate impressions of people's psychological traits and has significant social consequences. One explanation for this paradox is that first impressions of faces overgeneralize our adaptive impressions of categories of people that those faces resemble (including babies, familiar or unfamiliar people, unfit people, emotional people). Research testing these 'overgeneralization' hypotheses elucidates why we form first impressions from faces, what impressions we form, and what cues influence these impressions. This article focuses on commonalities in impressions across diverse perceivers. However, brief attention is given to individual differences in impressions and impression accuracy.

Research on first impressions has come a long way since the 1946 publication of Solomon Asch's article "Forming impressions of personality." This classic paper launched decades of research examining how perceivers integrate distilled trait information about a target person, presented as lists of trait words, to arrive at an overall positive or negative impression. This work taught us about 'central traits' - knowledge that a person is 'warm' skews impressions in a positive direction despite other negative information, while the trait 'cold' skews impressions in a negative direction, and 'peripheral traits' like 'polite' or 'blunt' carry no undue weight. It also taught us about 'primacy effects' – the person who is first perceived as industrious and then as stubborn is judged more positively than one who is first perceived as stubborn. Almost 40 years after Asch's landmark research, Reuben Baron and I argued that while this approach taught us much about the processing of information in impression formation, a fuller understanding required identifying the stimulus information that reveals traits like 'warm' or 'polite,' since these are rarely presented to us in word lists (McArthur & Baron, 1983; see Secord Dukes, & Bevan, 1954, for an early emphasis on stimulus information). The present paper considers facial information as a source of first impressions. More specifically, it examines judgments about psychological qualities of strangers based on their neutral expression faces in static photographs.

Cultural wisdom instructs us not to 'judge a book by its cover.' This warning suggests both that our natural inclination is to judge people by their appearance and also that doing so will lead to erroneous first impressions. The warning is correct on both counts. First, impressions from faces are fast and automatic. They are elicited by brief exposure, in some cases 100 ms or less (Willis & Todorov, 2006). Moreover, there is remarkable consensus in first

[1]Corresponding Author: Leslie A Zebrowitz, Department of Psychology MS 062, Brandeis University, Waltham, MA 02454, USA, Phone: 617-939-1455, FAX: 781-736-3263, zebrowitz@brandeis.edu.

impressions of traits like warmth and dominance, including cross-cultural agreement that extends even to indigenous people from the remote Bolivian rainforest (Zebrowitz et al., 2012). There also is evidence that infants' and young children's responses to faces are similar to those of adults (Cogsdill, Todorov, Spelke, & Banaji, 2014; Keating & Bai, 1986; Langlois, Roggman, & Rieser-Danner, 1990; Montepare & Zebrowitz-McArthur, 1989). Second, although some first impressions of traits show better than chance accuracy (Boshyan, Zebrowitz, Franklin, McCormick, & Carré, 2014; Zebrowitz et al., 2014), impressions can also be wrong (Zebrowitz & Rhodes, 2004; Rule, Krendl, Ivcevic, & Ambady, 2013; Todorov, Olivola, Dotsch, Mende-Siedlecki, 2015). Errors are particularly troublesome given that traits inferred from people's facial appearance are linked to significant real world social outcomes, including electoral success (Olivola & Todorov, 2010), financial rewards (Rule & Ambady 2011), and judicial decisions (Zebrowitz & McDonald, 1991).

These results are paradoxical. On the one hand, first impressions from faces are present from an early age and shared across cultures, which suggests that they serve some evolutionarily adaptive function. On the other hand, consensual first impressions from faces can be wrong. This paradox is resolved by the proposition that these impressions are often overgeneralizations of an adaptive response. Specifically, facial qualities that ordinarily reveal some personal characteristic that is important for adaptive social interaction can influence first impressions even when the individual being judged does not actually have that personal characteristic, but only physically resembles someone who does (Zebrowitz & Collins, 1997). Research is reviewed that applies this overgeneralization proposition to answer three questions: Why do we form consensual first impressions of people from facial appearance? What impressions do we form? What facial cues do we use?

Why do we form consensual first impressions from faces?

Four face overgeneralization effects provide an explanation for consensual first impressions that transcend perceiver age and culture, yet may be erroneous (Zebrowitz, 2011). In babyface overgeneralization, the adaptive value of responding appropriately to babies, such as giving protection or inhibiting aggression, produces a strong tendency to respond to facial qualities that identify babies, and this is overgeneralized to first impressions of people whose facial structure resembles a baby, regardless of their actual age. In familiar face overgeneralization, the adaptive value of differentiating friends from foes or known individuals from strangers produces a strong tendency to respond to face familiarity, and this is overgeneralized to impressions of strangers who vary in their resemblance to known individuals. In unfit face overgeneralization, the adaptive value of recognizing unfit people with disease or bad genes, such as rejecting them as mates or avoiding contagion, produces a strong tendency to respond to facial qualities that mark low fitness, and this is overgeneralized to impressions of normal unattractive people whose facial structure resembles individuals low in fitness. In emotion face overgeneralization, the adaptive value of responding appropriately to emotional expressions, such as avoiding an angry person or approaching a happy one, produces a strong tendency to respond to facial qualities that reveal emotions, and this is overgeneralized to impressions of people whose facial structure resembles a particular emotional expression.

What impressions do we form?

Paralleling early work using trait adjectives that identified warmth/trustworthiness and power/dominance as the fundamental dimensions underlying trait impressions (Rosenberg, Nelson, & Vivekananthan, 1968), research using faces also has identified these two dimensions (Todorov et al., 2015). The four face overgeneralization effects contribute to first impressions of traits that are captured by these dimensions.

Consistent with babyface overgeneralization, impressions of childlike traits, including high warmth, low power, and low competence, are elicited by faces that look more babyish, as assessed either by human raters or computer modeling of facial metrics, and these effects hold true regardless of face age, gender, or race (Berry & McArthur, 1986; Montepare & Zebrowitz, 1998; Zebrowitz, Fellous, Mignault, & Andreoletti, 2003).

Consistent with familiar face overgeneralization, people not only prefer faces they have seen before, the *mere exposure* effect, but also they prefer novel faces that are similar to previously seen ones, a *generalized mere exposure* effect (Zebrowitz, White, & Wieneke, 2008). Also, more familiar looking strangers are judged more trustworthy than those who look less familiar (Zebrowitz, Bronstad, & Lee, 2007; Debruine, 2002). When two strangers both look familiar, overgeneralization effects depend on the source of familiarity. Someone who looks familiar because she resembles a person who had treated the perceiver kindly is treated favorably, while one who resembles a person who had treated the perceiver irritably is avoided (Lewicki, 1985). Other evidence that unfamiliarity influences impressions is provided by White judges' reactions to faces that have more prototypically Black features. Regardless of their actual race, such faces are perceived to have more negative traits (Blair, Judd, Sadler, & Jenkins, 2002).

Consistent with unfit face overgeneralization, computer modeling shows that unattractive faces resemble faces with genetic anomalies more than do attractive faces and, like the anomalous faces, unattractive faces elicit impressions of lower warmth, power, competence, and health than do attractive faces even when all are normal, healthy individuals (Zebrowitz et al., 2003). Notably, this overgeneralization effect at least partially accounts for more positive impressions of more attractive people, dubbed the 'attractiveness halo effect' (Eagly, 1991).

Consistent with emotion face overgeneralization, higher dominance and lower warmth are perceived not only in angry faces, but also in neutral expression faces that show more resemblance to angry expressions, either as assessed by human raters (Montepare and Dobish 2003) or computer methods (Said, Sebe, and Todorov 2009; Zebrowitz, Kikuchi, and Fellous 2010), or as manipulated by lowering eyebrow height (Keating, Mazur, and Segal 1981), with opposite impressions of neutral faces showing greater resemblance to happy expressions.

Face overgeneralization effects fuel group stereotypes. As noted above, babyfaceness varies with gender, and the greater babyfaceness of women contributes to impressions of female faces as warmer and less powerful than male faces (Friedman & Zebrowitz, 1992). Computer modeling reveals that resemblance to genetically anomalous faces varies with age,

and the greater resemblance of older faces contributes to impressions of them as less warm and healthy than younger ones (Zebrowitz et al., 2003). Familiarity varies with race. The lesser familiarity of other race faces contributes to ingroup favoritism and race stereotypes, enhancing negative impressions of other-race faces and diminishing positive ones (Zebrowitz et al., 2007). Computer modeling reveals that resemblance to emotion expressions also varies with race. Neutral expression Black faces resemble happy expressions more and angry expressions less than do White faces. These differences suppress White perceivers' impressions of Black faces as more hostile, less trustworthy, and less competent than White faces, as shown by the finding that statistically controlling race differences in emotion resemblance increases the negativity of White perceivers' impressions of Black faces. Like Black faces, neutral expression Korean faces look more emotionally positive than White faces, which contributes to White judges' impressions of Korean faces as less hostile, more trustworthy, and more competent than White faces -- the "model minority" Asian stereotype (Zebrowitz et al., 2010). Emotion resemblance also varies with gender (Zebrowitz et al., 2010; Hess, Adams, and Kleck 2004). Female faces show greater resemblance to fear/surprise than male faces, which show greater resemblance to anger. This may augment the stereotypic impression that women are less dominant than men.

What facial cues do we use?

Although research indicates that we are often unaware of the facial cues that influence impressions, it also shows that they are consistent with overgeneralization effects.

Babyfaceness

Consistent with babyface overgeneralization, facial cues that differentiate real babies from adults influence the babyfaceness of adults and associated impressions. These include larger eyes, higher eyebrows, smaller nose bridges, rounder and less angular faces, thicker lips, and lower vertical placement of features, which creates a higher forehead and a shorter chin (Berry & McArthur, 1986; Montepare & Zebrowitz, 1998).

Familiarity

Many facial cues to familiarity depend on the unique experiences of the perceiver. However, some may reflect shared experiences. Most notably, other race faces are likely to be less familiar than own race faces. Thus, race-related cues, including skin tone and facial structure, may vary in familiarity and associated impressions, even when all the faces are perceived as being the same race (Blair et al., 2002).

Fitness

Facial cues that evolutionary psychologists have linked to fitness include averageness (a facial configuration close to the population mean), symmetry, sex-linked features, and youthfulness. It has been argued that averageness and symmetry signal fitness because they show the ability to develop normally despite environmental stressors. Averageness also signals genetic diversity, which is associated with a strong immune system. High masculinity in male faces may indicate fitness because it shows an ability to withstand the

stress that testosterone places on the immune system. High femininity in female faces may signal fitness by association with sexual maturity and fertility. Youthfulness is related to fitness inasmuch as aging often carries declines in cognitive and physical functioning. These fitness cues influence perceived attractiveness which is associated with fitness-related trait impressions (Rhodes, 2006).

Emotion resemblance

Research has not systematically investigated the cues that contribute to emotion resemblance in neutral expression faces and associated impressions, but it is likely to be those that differentiate among various emotion expressions. For example, naturally lower eyebrows on a neutral expression face are likely to make the person look angrier, naturally higher eyebrows are likely to make the person look more surprised, and naturally upturned corners on the mouth are likely to make the person look happier. As noted above, gender and race also affect emotion resemblance (Zebrowitz et al. 2010). However, specific facial cues that account for these group differences remain to be determined.

Individual differences in first impressions

Despite commonalities in first impressions across diverse perceivers, individual differences should be acknowledged. Impressions depend not only on what information faces provide, but also perceivers' prior perceptual experiences and behavioral goals.

An illustration of how prior perceptual experiences could produce individual differences in trait impressions is provided by a study in which perceivers viewed faces with different shapes (short, average, long) paired with different traits (very fair, average, or very unfair). For one group of perceivers, short faces were the fair ones and long faces were unfair, while this perceptual experience was reversed for a second group, with average length faces described as average in fairness for both groups. Perceivers for whom short faces had been the fair ones judged a new short-faced person as fairer than a new long-faced or average-faced person, with the reverse shown by those for whom long faces had been the fair ones (Hill, Lewicki, Czyzewska, & Schuller, 1990).

Individual differences also may be influenced by perceivers' goals. For example, people who live in cultures with a high incidence of parasites, and thus have a higher need to avoid unfit associates, show a stronger preference for physically attractive mates (Gangestad & Buss, 1993). Perceivers who feel more vulnerable to disease show more negative reactions to ethnic outgroups (Neuberg, Kenrick, & Schaller, 2011). These studies have obvious implications for individual differences in unfit face and familiar face overgeneralization effects.

What about accuracy?

Overgeneralization and accuracy are not mutually exclusive. Indeed, overgeneralization could produce statistically significant relationships between impressions of people based on their appearance and their actual behavior via self-fulfilling prophecy effects, whereby appearance elicits social interactions that elicit the expected behaviors. Overgeneralization

also could produce significantly inaccurate perceptions via self-defeating prophecy effects, whereby the social interactions elicited by appearance may contribute to behaviors that defy impressions. Other mechanisms that could yield actual relationships between appearance and behavior include biological links between facial appearance and traits, environmental factors that influence both, and an influence of traits on appearance (Zebrowitz and Collins, 1997). Perceivers may be sensitive to actual relationships between facial appearance and traits either through perceptual learning or an evolutionary preparedness.

Understanding trait impression accuracy not only requires considering various theoretical mechanisms, but also the statistical methods used to assess it. Typically, correlations are computed between perceivers' trait ratings (e.g., aggressiveness, competence) and indices of corresponding traits of the people whose faces are rated, and these correlations are compared with chance. Although some research has shown above chance accuracy, effect sizes are often quite small.

Conclusions

Many first impressions from faces are rooted in adaptive reactions to appearance cues that identify people of a particular age, familiarity, fitness, or emotion. Facial qualities that ordinarily reveal these categories of people can influence first impressions even when the person being judged does not actually belong to the category, but only physically resembles those who do. The resulting 'overgeneralized' impressions can predict significant social consequences in employment, judicial, and political settings, to name a few. Until there is clear evidence regarding which trait impressions from faces show sufficient accuracy to warrant using them to guide our behavior, it would seem wise to heed the admonition 'don't judge a book by its cover.'

Acknowledgments

References

Asch SE. Forming impressions of personality. Journal of Abnormal and Social Psychology. 1946; 41:258–290.

Berry DS, McArthur LZ. Perceiving character in faces: The impact of age-related craniofacial changes on social perception. Psychological Bulletin. 1986; 100:3–18. [PubMed: 3526376]

Blair L, Judd CM, Sadler MS, Jenkins C. The role of afrocentric features in person perception: Judging by features and categories. Journal of Personality and Social Psychology. 2002; 83:5–25. [PubMed: 12088132]

Boshyan J, Zebrowitz LA, Franklin RG, McCormick CM, Carré JM. Age similarities in recognizing threat from faces and diagnostic cues. Journals of Gerontology, Series B:Psychological Sciences and Social Sciences. 2014; 69B:710–718.

Cogsdill EJ, Todorov AT, Spelke ES, Banaji MR. Inferring character from faces: A developmental study. Psychological Science. 2014; 25:1132–1139. [PubMed: 24570261]

DeBruine L. Facial resemblance enhances trust. Proceedings of the Royal Society of London, B. 2002; 269:1307–1312.

Eagly AH, Ashmore RD, Makhijani MG, Longo LC. What is beautiful is good, but …: A meta-analytic review of research on the physical attractiveness stereotype. Psychological Bulletin. 1991; 110:109–128.

Friedman H, Zebrowitz LA. The contribution of facial maturity to sex-role stereotypes. Personality and Social Psychology Bulletin. 1992; 18:430–438.

Gangestad SW, Buss DM. Pathogen prevalence and human mate preferences. Ethology and Sociobiology. 1993; 14:89–96.

Hess U, Adams R, Kleck B. Facial appearance, gender, and emotion expression. Emotion. 2004; 4:378–388. [PubMed: 15571436]

Hill T, Lewicki P, Czyzewska M, Schuller G. The role of learned inferential encoding rules in the perception of faces: Effects of nonconscious self-perpetuation of a bias. Journal of Experimental Social Psychology. 1990; 26 350-37.

Keating CF, Mazur A, Segall MH. A cross-cultural exploration of physiognomic traits of dominance and happiness. Ethology and Sociobiology. 1981; 2:41–48.

Keating CF, Bai DL. Children's attributions of social dominance from facial cues. Child Development. 1986; 57:1269–1276.

Lewicki P. Nonconscious biasing effects of single instances on subsequent judgments. Journal of Personality & Social Psychology. 1985; 48:563–574.

Langlois JH, Roggman LA, Rieser-Danner LA. Infants' differential social responses to attractive and unattractive faces. Developmental Psychology. 1990; 26:153–159.

McArthur LZ, Baron RM. Toward an ecological theory of social perception. Psychological Review. 1983; 90:215–238.

Montepare JM, Dobish H. The contribution of emotion perceptions and their overgeneralizations to trait impressions. Journal of Nonverbal Behavior. 2003; 27:237–254.

Montepare, JM., Zebrowitz, LA. Person perception comes of age: The salience and significance of age in social judgments. In: Zanna, MP., editor. Advances in Experimental Social Psychology. Vol. 30. San Diego, CA: Academic Press; 1998. p. 93-163.

Montepare JM, Zebrowitz-McArthur L. Children's perceptions of babyfaced adults. Perceptual and Motor Skills. 1989; 69:467–472. [PubMed: 2812994]

Neuberg SL, Kenrick DT, Schaller M. Human threat management systems: Self–protection and disease avoidance. Neuroscience and Biobehavioral Reviews. 2011; 35:1042–1051. [PubMed: 20833199]

Olivola CY, Todorov A. Elected in 100 milliseconds: Appearance-based trait inferences and voting. Journal of Nonverbal Behavior. 2010; 34:83–110.

Rhodes G. The evolutionary psychology of facial beauty. Annual Review of Psychology. 2006; 57:199–226.

Rosenberg S, Nelson C, Vivekananthan PS. A multidimensional approach to the structure of personality impressions. Journal of Personality and Social Psychology. 1968; 9:283–294. [PubMed: 5670821]

Rule NO, Ambady N. Face and fortune: Inferences of personality from Managing Partners' faces predict their law firms' financial success. Leadership Quarterly. 2011; 22:690–696.

Rule NO, Krendl AC, Ivcevic Z, Ambady N. Accuracy and consensus in judgments of trustworthiness from faces: Behavioral and neural correlates. Journal of Personality and Social Psychology. 2013; 104:409–426. [PubMed: 23276271]

Said CP, Sebe N, Todorov A. Structural resemblance to emotional expressions predicts evaluation of emotionally neutral faces. Emotion. 2009; 9:260–264. [PubMed: 19348537]

Secord PF, Dukes WF, Bevan W. Personalities in faces: I. An experiment in social perceiving. Genetic Psychology Monographs. 1954; 49:231–270. [PubMed: 13173934]

Todorov A, Olivola CY, Dotsch R, Mende-Siedlecki P. Social attributions from faces: determinants, consequences, accuracy, and functional significance. Annual review of psychology. 2015; 66:519–545.

Willis J, Todorov A. First impressions: making up your mind after a 100-ms exposure to a face. Psychological Science. 2006; 17:592–598. [PubMed: 16866745]

Zebrowitz, LA. Ecological and social approaches to face perception. In: Calder, AJ.Rhodes, G.Haxby, JV., Johnson, Mark H., editors. The Handbook of Face Perception. Oxford University Press; 2011. p. 31-50.

Zebrowitz LA, Collins MA. Accurate social perception at zero acquaintance: The affordances of a Gibsonian approach. Personality and Social Psychology Review. 1997; 1:203–222.

Zebrowitz LA, Bronstad PM, Lee HK. The contribution of face familiarity to in group favoritism and stereotyping. Social Cognition. 2007; 25:306–338.

Zebrowitz LA, Fellous JM, Mignault A, Andreoletti C. Trait impressions as overgeneralized responses to adaptively significant facial qualities: Evidence from connectionist modeling. Personality and Social Psychology Review. 2003; 7:194–215. [PubMed: 12788687]

Zebrowitz LA, Franklin RG Jr, Boshyan J, Luevano V, Agrigoroaei S, Milosavljevic B, Lachman ME. Older and Younger Adults' Accuracy in Discerning Health and Competence in Older and Younger Faces. Psychology and Aging. 2014; 29:454–468. Special Section: Social Perception and Aging. [PubMed: 25244467]

Zebrowitz LA, Kikuchi M, Fellous JM. Facial Resemblance to Emotions: Group Differences, Impression Effects, and Race Stereotypes. Journal of Personality and Social Psychology. 2010; 98(2):175–189. [PubMed: 20085393]

Zebrowitz LA, McDonald S. The impact of litigants' baby faced ness and attractiveness on adjudications in small claims courts. Law and Human Behavior. 1991; 15:603–623.

Zebrowitz LA, Rhodes G. Sensitivity to 'bad genes' and the anomalous face overgeneralization effect: Accuracy, cue validity, and cue utilization in judging intelligence and health. Journal of Nonverbal Behavior. 2004; 28:167–185.

Zebrowitz LA, Wang R, Bronstad PM, Eisenberg D, Undurraga E, Reyes-García V, Godoy R. First Impressions From Faces Among U.S. and Culturally Isolated Tsimane' People in the Bolivian Rainforest. Journal of Cross-Cultural Psychology. 2012; 43(1):119–134.

Zebrowitz LA, White B, Wieneke K. Mere exposure and racial prejudice: Exposure to other-race faces increases liking for strangers of that race. Social Cognition. 2008; 26:259–275. [PubMed: 19584948]

Recommended Readings

Carney DR, Colvin CR, Hall JA. A thin-slice perspective on the accuracy of first impressions. Journal of Personality. 2007; 41:1054–1072. • This paper discusses the accuracy of first impressions given multi-modal dynamic information that varies in duration.

Rule NO, Ambady N, Adams RB Jr, Ozono H, Nakashima S, Yoshikawa S, Watabe M. Polling the face: Prediction and consensus across cultures. Journal of Personality and Social Psychology. 2010; 98:1–15. [PubMed: 20053027] • A study that illustrates original research about trait impressions from faces

Secord PF, Dukes WF, Bevan W. Personalities in faces: I. An experiment in social perceiving. Genetic Psychology Monographs. 1954; 49:231–270. [PubMed: 13173934] • A historical classic; one of the first empirical papers on trait impressions from faces.

Zebrowitz LA. Reading Faces: Window to the Soul?. 1997Boulder, COWestview Press • A user friendly and abundantly illustrated account of first impressions from faces that provides more historical background and more elaboration of the babyface and unfit face overgeneralization effects than the current paper.

Zebrowitz LA, Montepare JM. Bargh, John, Borgida, GeneFaces and first impressions. Handbook of Personality and Social Psychology. 2014; 1Attitudes and Social Cognition. Washington D.CAmerican Psychological Association • A relatively comprehensive review for readers who wish to expand their knowledge of first impressions from faces, with more attention to social and psychological consequences than the current paper.