What Makes Someone Look Gullible? Influence of Gender and Emotional Expression on Perceptions of Gullibility in Faces

Alexandrina P. Petrova

Tilburg University

Bachelor Thesis in Social Psychology

Supervised by Erdem O. Meral

Abstract

There is evidence that people form impressions of personality characteristics based on facial appearance (e.g., trustworthiness, dominance, competence). In this paper, we propose that one such characteristic is gullibility and we examine what facial cues could possibly make someone look gullible. Building on previous literature on face perception, we hypothesize that gender and emotional expression can influence gullibility perceptions. To test this prediction, we conducted a study in which participants (N = 212) had to rate how gullible they perceive faces depicted in photos to be. We found that women were rated as more gullible than men and happy faces were judged as more gullible than neutral faces. The gender difference was greater in the neutral expression condition. The current study is the first to examine how perceptions of gullibility are formed and it contributes to the literature on face perception and gullibility. Directions for future research are discussed.

Keywords: gullibility, gender, emotional expression, face perception, trait impressions

What Makes Someone Look Gullible? Influence of Gender and Emotional Expression on Perceptions of Gullibility in Faces

In social interactions, people often rely on first impressions to make judgments about others. More specifically, they derive inferences about certain personality traits from faces (Gordon & Platek, 2009). Here, we are interested in the specific facial appearance of a gullible person and the possible factors that influence perceptions of gullibility. Particularly, we examine the effect of gender and emotional expression on gullibility ratings of targets in photos.

Due to the widespread use of social media, appearances have gradually become a primary basis on which we receive information about others, that is, through photos they post of themselves, without having met them in person. Research findings on facial perception show that faces contain essential social cues (Sutherland, Rhodes, & Young, 2017). Inferences about personality characteristics based on features of the face are quick and implicit (Gordon & Platek, 2009), as well as highly agreed upon among observers and relatively correct for particular attributes (Carré, McCormick, & Mondloch, 2009). For example, people can make judgements about someone's trustworthiness and competence merely by looking at their face (Gordon & Platek, 2009). Similarly, it can be expected that certain facial features might create the impression that a person is especially gullible. Gullible individuals, by definition, display a propensity towards being deceived and taken advantage of, repeatedly and across multiple situations, disregarding warning signs (Greenspan, 2008, p. 2). Forgas and Baumeister (2019) even describe gullibility as "a failure of social intelligence" (p. 2), emphasizing its negative social evaluation. Furthermore, this tendency to easily believe deceptive information enables social influence processes (Forgas & Baumeister, 2019) and could prove particularly disadvantageous in situations where one might potentially be exploited in some way. One such

instance is online scamming victims of which are believed to be, in fact, more gullible (Titus & Gover, 2001), and are more often female than male (Whitty, 2018). When choosing their targets, it could be that scammers rely on certain cues in profiles (e.g., the actual photos people upload of themselves). If judgments are indeed based on profile pictures, is it possible then that scammers can deduce a gullible personality from the facial appearance of their potential victims?

We discuss online scamming as a relevant example because it illustrates a real-life negative outcome of (perceived) gullibility (i.e., being swindled). The massive growth in internet use has brought about a rather advantageous climate for ill-intentioned individuals to commit cyber crimes (Button, Nicholls, Kerr, & Owen, 2014). For example, an extremely pervasive type of online fraud appears to be online dating romance scams (Rege, 2009), estimating 3,981 cases recorded in Australia and more than 4,500 filed complaints in the United Kingdom just in 2018 (Harán, 2019). However, since most of the cases go unreported, the scope of such scams is thought to be much bigger (Whitty & Buchanan, 2012).

Perpetrators of online dating romance scams typically pursue financial gain by making use of fake identity profiles on online dating websites, applications or social networking sites (Buchanan & Whitty, 2014). Some 54% of adults dating online report instances of others misrepresenting themselves in their profiles (Vandeweerd, Myers, Coulter, Yalcin, & Corvin, 2016). Falling victim to a scam of this kind bears considerable financial and psychological consequences, such as monetary loss, severe emotional distress (Kee & Yazdanifard, 2015) lowered self-esteem and general loss of trust (Whitty & Buchanan, 2016). In light of such concerning statistics, the assumption that gullibility can be perceived from faces and consequently lead to negative outcomes for individuals (e.g., facilitate scammers in choosing

more vulnerable targets) merits thorough investigation. Correspondingly, particular attention should be directed to what variations in facial appearance contribute to gullibility impressions.

Given the scarcity of literature on gullibility, we hereby extrapolate findings on face perception to the present research and focus on two possibly related factors - gender and emotional expression. More specifically, the aim of the current study is to examine how gender and emotional expression of the target influence perceptions of gullibility in faces.

Emotional expression

The impressions we form of others' personality characteristics depend on both their facial appearance and emotional expression (Hess, Adams Jr, & Kleck, 2009). Studies have demonstrated that people who are smiling are judged as kinder, humorous and less dominant, as well as generally happier (Krumhuber, Manstead, & Kappas, 2007). In contrast, angry expression is associated with an impression of aggressive and dominant personality (Branham, 2001). Therefore, hypothesizing that emotional expression influences perceptions of gullibility, it can be predicted that smiling people would be perceived as more gullible targets since they evoke less dominance cues. Interestingly, neutral faces can also display emotions depending on particular facial features (Hess et al., 2009), namely eyebrows (Adams Jr, Nelson, Soto, Hess, & Kleck, 2012). High eyebrows, characteristic of women, indicate submissiveness and fear, while low eyebrows, typical for men, signal dominance and anger (Adams Jr et al., 2012). In this case, it can be speculated that targets with happy faces would be judged as more gullible than targets with neutral faces. What is more, it appears that happy faces and female faces possess similar characteristics and are viewed as more submissive, while typical features of neutral expressions relate more to male faces and look more dominant. These differences in dominance deduced from facial appearance seem to be closely associated with expectations about gender-stereotypic

impressions (Adams Jr et al., 2012). Thus, gender emerges as a possible factor that could have an effect on perceptions of gullibility in faces.

Gender

As shown in a pilot study by Adams Jr et al. (2012), gender might also play a role in deriving personality inferences from facial appearance, since neutral female faces were judged as less angry, more submissive, naïve, sincere, cooperative, babyish, fearful, and happy in comparison to male neutral faces. In more general terms, the facial structure of women seemingly evokes cues of happiness, while the facial structure of men suggests cues of anger (Hess et al., 2009). If it is indeed the case that female faces displaying no specific emotion tend to be perceived as more naïve and happier than expressionless male faces, then it can be expected that women, on average, would receive higher gullibility ratings than men.

In terms of differences in gender and emotional expression, baby-facedness is also worthwhile to be mentioned as related to the concept of gullibility. Opposed to male faces, female faces tend to be rounder, with high eyebrows and full lips somewhat resembling the face of a baby (Adams Jr et al., 2012). Generally, baby-faces in individuals denote femininity and approachability (Hess et al., 2009), as well as submissiveness, credulity, sincerity, kindness, warmth and weakness, contrary to people with mature appearance who tend to be judged as more competent and warranting respect (Branham, 2001). Consequently, it begs the question as to why baby-faced individuals are perceived as stereotypically naïve. As explained by Naylor (2007), following the kernel of truth logic, credulity is in fact a trait pertaining to babies, hence baby-faced adults are supposed to possess the same personality characteristic, although to date there is no scientific support for this generalization. Drawing on these premises, we can corroborate that

since female faces usually bear more resemblance to baby faces, women are more likely to evoke impressions of gullibility than men.

The present study

The current research looks into gender and emotional expression of targets as predictive factors of gullibility ratings in faces. We hypothesize that gender will have an effect on gullibility ratings, such that women would be perceived as more gullible than men independent of emotional expression (happy versus neutral). Additionally, emotional expression, regardless of gender, could influence perceptions of gullibility, resulting in targets with happy faces being judged as more gullible than targets with neutral faces. In the same vein, we suggest that females with a happy facial expression would be viewed as more gullible than females with a neutral one, and males with a happy facial expression would be considered as more gullible than their neutral counterparts. However, since females normally might tend to be considered as more credulous, it could also be that female ratings of gullibility do not differ depending on emotional expression while male ratings do. In aiming to answer our research question, we take into account the possibility of all aforementioned main and interaction effects.

Method

Participants and design

Participants were 212 first-year Psychology Bachelor students at Tilburg University (56 male, 152 female, Mage = 20.19 years, SD = 2.39) who took part in the study in exchange for required experimental subject hours. We used a mixed factorial research design with random assignment of participants. Three independent variables were manipulated: gender (two levels – male and female), emotional expression (two levels – happy and neutral), and age (three levels – young, middle-aged and old) of the target. Ratings of gullibility were measured as a dependent

variable. For the purpose of the present study, we are focusing only on the data that we collected for gender and emotional expression, disregarding age.

Materials and procedure

At the beginning of our survey, informed consent was obtained from the participants. Afterwards, they were presented with pictures of faces and were asked to rate the gullibility of each target. We measured the perceived gullibility of all 171 Caucasian individuals (58 young, 56 middle-aged, 57 old women and men) from the FACES face photo database (FACES: Ebner, Riediger, & Lindenberger, 2010). We used the "a" set of the photos and only included the neutral and happy expressions image sets (i.e., a total of 342 images). Each participant saw a subset of 72 faces and rated how gullible they think the person in the image is on a scale from 1 (not at all) to 7 (extremely). There were 6 subsets in total, each one consisting of approximately equal numbers of male/female, neutral/happy, and young/middle-aged/old faces (sets 2,3, and 4 included 72 photos each, while set 1 and 5 contained 63 photos). However, with regards to age we were only focusing on the average across all three age groups. At the end of the survey, participants had to answer several demographic questions (i.e., gender, age, and nationality) and were debriefed and thanked for their participation.

Results

Before conducting a mixed between-within subjects analysis of variance, we checked the corresponding assumptions. To begin with, since our sample size is large enough (e.g. 30+), ANOVA is robust against violations of the normality of observations assumption (Pallant, 2016, p. 206). Furthermore, Levene's test of equality of error variances showed that the assumption of homogeneity of variances was violated for one level of the factor emotional expression (p = .021), but not for the other one. However, since the group sizes are equal here, ANOVA is

rather robust against the violation (Pallant, 2016, p. 207). Upon analyzing our data and presenting the results, all of the aforementioned assumptions were taken into account.

A 2 x 2 Mixed ANOVA was conducted to examine the effects of the between-subjects factor gender (male, female) and the within-subjects factor emotional expression (happy, neural) on gullibility ratings. It revealed a significant main effect of emotional expression $F(1, 169) = 1380.20$, $p < .001$, $\eta_p^2 = .89$, with happy faces ($M = 5.67$, $SD = 0.35$) rated as more gullible than neutral faces ($M = 4.13$, $SD = 0.60$). There was also a significant main effect of gender $F(1, 169) = 23.77$, $p < .001$, $\eta_p^2 = .12$, with females ($M = 5.04$, $SD = 0.38$) receiving higher gullibility scores than males ($M = 4.76$, $SD = 0.38$). Furthermore, the analysis yielded a significant interaction effect between gender and emotional expression $F(1, 169) = 4.692$, $p = .032$, $\eta_p^2 = .03$ (representing a small effect size), which means that emotional expression had a different effect on gullibility ratings depending on whether the target was a man or a woman. For females, happy faces ($M = 5.77$, $SD = 0.34$) were rated as more gullible than neutral ones ($M = 4.31$, $SD = 0.52$). Likewise, for males, happy faces ($M = 5.57$, $SD = 0.34$) received higher gullibility ratings than neutral ones ($M = 3.94$, $SD = 0.62$). As can be seen in Figure 1, the difference in gullibility scores between the two genders was bigger for neutral faces than for happy faces.

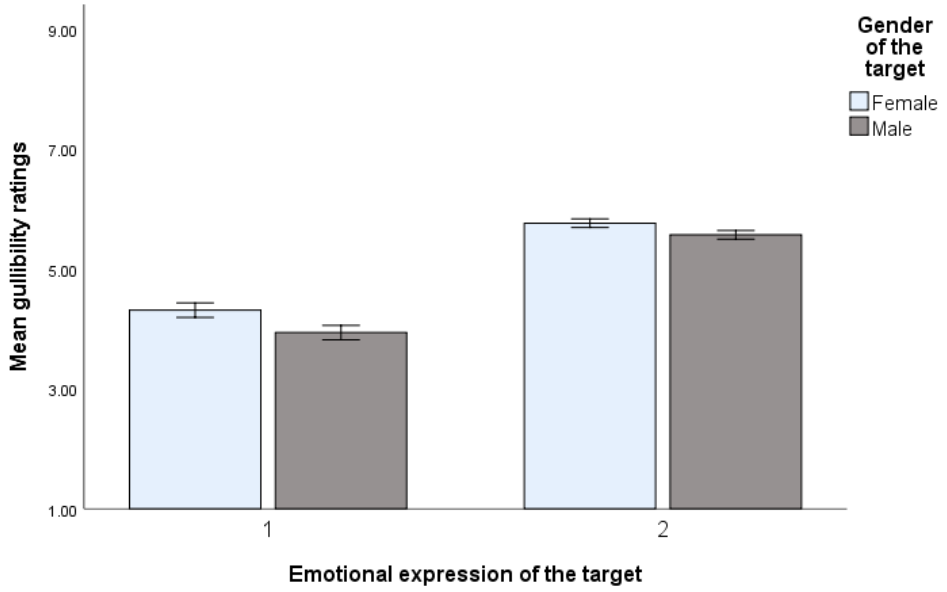

Figure 1. Mean gullibility ratings for each condition of gender and emotional expression of the target (error bars represent 95% confidence intervals).

In order to better interpret the main effects in the presence of a significant interaction, simple effects analyses were carried out. The analysis showed that there was a significant difference ($p < .001$) between men and women in the neutral expression condition, with women ($M = 4.31$, $SD = 0.52$) scoring higher on gullibility than men ($M = 3.94$, $SD = 0.62$). Females and males significantly differed ($p < .001$) in the happy expression condition, with the former group ($M = 5.77$, $SD = 0.34$) being perceived as more gullible than the latter group ($M = 5.57$, $SD = 0.34$). Correspondingly, when the gender of the target was female there was a significant difference ($p < .001$) in gullibility ratings for neutral and happy faces. In the same direction, when the target gender was male there was also a significant difference ($p < .001$) between the two emotional expressions. Overall, female faces were rated higher on gullibility than male faces, and happy faces were perceived as more gullible than neutral faces, which is in line with

our predictions. Both genders differed in their gullibility ratings depending on the emotional expression, but this difference was larger in the neutral condition.

Discussion

The current work examined how gender and emotional expression of a person depicted in a photo could impact perceivers' judgments about the target's gullibility. Applied to our concrete example of online scamming, answering this research question would contribute to understanding the mechanisms through which certain individuals, based on their profile photos, are prone to be identified by scammers as potentially easy targets.

Our study showed that, as hypothesized, faces with a happy expression were judged as somewhat more gullible than faces with a neutral expression. This finding corroborates previous explanations that smiling tends to be linked to attributions of a meeker personality (Krumhuber et al., 2007), one that may be more susceptible to deception, whereas a neutral facial expression implies the opposite tendency (Adams Jr et al., 2012). Thus, individuals who are smiling in their profile photos might unwittingly transmit cues leading scammers to view them as more credulous.

Our hypothesis concerning the influence of gender was also confirmed: women were, on average, perceived as slightly more gullible than men. Quite possibly, the difference we found could be stemming from the structure of the female face itself. For example, prior research has highlighted female facial features as bearing resemblance to baby faces and evoking impressions of submissiveness and naivety (Adams Jr et al., 2012; Hess et al., 2009), in contrast to stereotypical male faces. If online scammers were to indeed make such inferences based on photos, one logical consequence would be that the tendency to become a scam victim might be greater for women than for men, which was shown to the case (Whitty, 2018).

Interestingly, our study demonstrated also that the effect of gender on gullibility ratings depended to a certain extent on emotional expression and vice versa. In other words, a face was judged as more gullible if it was female and expressed happiness. Male happy faces were also perceived as more gullible. Moreover, the gender difference in gullibility was more pronounced for neutral expression. Within the scope of online fraud, this interaction implies that scammers could form impressions of others' gullibility taking into account both gender and emotional expression in combination, as displayed in photos.

Our findings add to the growing body of research on face perception by providing support for yet another personality disposition that people make judgments about based on facial cues. Next to previous studies reporting inferences of competence (Todorov, Mandisodza, Goren, & Hall, 2005), trustworthiness and aggressiveness (Willis & Todorov, 2006) from faces, we present evidence that gullibility can also be inferred from facial appearance. Going one step further, we uncover two specific factors at play in the formation of first impressions– gender and emotional expression. By accumulating similar insights, researchers increasingly highlight the importance of basic facial cues for social judgments.

In contrast to the abundance of research on face perception, gullibility has not been a concept of great scientific interest and to our knowledge, the present investigation is the first to study it directly. While Forgas and Baumeister (2019) centered their recent work around the social psychological nature and functions of gullibility and the different cognitive, emotional and motivational aspects that influence it, we focused more on the outward manifestations of gullibility that observers pick up on in terms of facial appearance. The current research could constitute a building block for the better understanding of gullibility as a personality trait and its social outcomes.

Regarding the methodological specifics of our study, some strong points are worthwhile to be mentioned. First, the facial stimuli that we used to test our predictions are a part of a validated database of images representing faces that vary in gender, expression and age (FACES: Ebner, Riediger, & Lindenberger, 2010). The subset each participant was presented with contained photos in randomized order to control for the possibility of sequential effects and repetition priming. What is more, participants were not limited in exposure time to each stimulus, yet they were instructed to make quick judgments relying on first impressions. Therefore, we can safely assume that the duration of stimuli presentation was neither too long nor too short for it to have distorted our data.

On another note, given its novelty, the present research surely has points of improvement that are worthwhile to be addressed. With respect to the chosen sample of participants, it is known that first-year Psychology Bachelor students are a convenient group for sampling purposes, however they may not be particularly representative of the general population due to some characteristics that distinguish them from other groups (e.g., level of education). However, even though in general it is possible that participants' individual (e.g., introversion/extroversion, as pointed out by Baccolo & Macchi Cassia, 2019) or cultural differences (for an explanation, see Engelmann & Pogosyan, 2013) in face perception may have had an influence on the trait judgments they made, this should not have systematically affected our results since the sample contains both Dutch and non-Dutch participants and the individual differences are expected to vary within the group. Notably, Hehman, Sutherland, Flake, & Slepian (2017) found that inferences of personality dispositions (e.g., dominance) are influenced to a greater extent by the characteristics of the perceiver than more appearance-related judgments (e.g., attractiveness). In the same vein, since gullibility is also a trait, it could be that impressions of gullibility depend

more on the characteristics of the perceiver compared to the cues of the target. We did not take this possibility into account since our point of focus were target facial differences and not perceiver ones, but its implications seem relevant enough to inform future research.

There are some other aspects, related in particular to external validity that we did not examine within the smaller scope of this very first study on gullibility perceptions as they are not substantial concerns but could pose an interesting avenue for future research. Namely, besides gender and emotional expression as predictors of gullibility in pictures of faces there could be other key factors based on which online scammers choose their victims. Possible confounds that we did not include in our study, but nonetheless merit exploring, could be target ethnicity, attractiveness, body type, hair color, clothing, posture, body language, angle, photo background, etc. For example, one additional suggestion would be to make use of face databases containing photos of not solely Caucasian individuals to investigate whether gullibility perceptions vary among different ethnic groups.

Future research design could also benefit from applying the more complex approach of reverse correlation (RC), which allows for the visualization of mental representations in a bottom-up way. Dotsch and Todorov (2012) demonstrated how social perceptions of traits like trustworthiness and dominance can be modeled with RC. Likewise, the same method can be used to create a representation of a prototypically gullible person.

To conclude, the present work provides the first experimental evidence that inferences about gullibility can be made based on the facial appearance of a person. We found that both gender and emotional expression of a person depicted in a photo could affect the extent to which others perceive the target as gullible. This finding has important implications for the prevention of online scams by making people aware of what clues perpetrators may be attending to while

selecting their victims. From a broader perspective, making attributions about personality traits by relying on first impressions is crucial in the context of social interaction, both online and in real life. For this reason, future research should aim to provide a better understanding of the processes underlying social perception and the specific personality characteristics it applies to.

References

Adams Jr, R. B., Nelson, A. J., Soto, J. A., Hess, U., & Kleck, R. E. (2012). Emotion in the neutral face: A mechanism for impression formation?. *Cognition & Emotion*, *26*(3), 431–441. doi: 10.1080/02699931.2012.666502

Baccolo, E., & Macchi Cassia, V. (2019). Individual differences in perceptual sensitivity and representation of facial signals of trustworthiness. *Journal of Experimental Psychology: Human Perception and Performance*, *45*(2), 224–236.

Branham, S. (2001). Creating physical personalities for agents with faces: Modeling trait impressions of the face. In *Proceedings of the UM2001 Workshop on Attitudes, Personality and Emotions in User-Adapted Interactions*. Sonthofen Germany.

Buchanan, T., & Whitty, M. T. (2014). The online dating romance scam: causes and consequences of victimhood. *Psychology, Crime & Law*, *20*(3), 261–283. DOI:10.1080/1068316X.2013.772180

Button, M., Nicholls, C. M., Kerr, J., & Owen, R. (2014). Online frauds: Learning from victims why they fall for these scams. *Australian and New Zealand Journal of Criminology*, *47*(3), 391–408. https://doi.org/10.1177/0004865814521224

Carré, J. M., McCormick, C. M., & Mondloch, C. J. (2009). Facial structure is a reliable cue of aggressive behavior. *Psychological Science*, *20*(10), 1194–1198. https://doi.org/10.1111/j.1467-9280.2009.02423.x

Dotsch, R., & Todorov, A. (2012). Reverse correlating social face perception. *Social Psychological and Personality Science*, *3*(5), 562–571. DOI: 10.1177/1948550611430272

Ebner, N. C., Riediger, M., & Lindenberger, U. (2010). FACES-A database of facial expressions in young, middle-aged, and older women and men: Development and validation. *Behavior Research Methods*, *42*(1), 351–362. http://doi.org/10.3758/BRM.42.1.351

Engelmann, J. B., & Pogosyan, M. (2013). Emotion perception across cultures: the role of cognitive mechanisms. *Frontiers in Psychology*, *4*, 118. doi: 10.3389/fpsyg.2013.00118

Forgas, J. P., & Baumeister, R. (2019). *The Social Psychology of Gullibility: Conspiracy Theories, Fake News and Irrational Beliefs*. London, United Kingdom: Routledge.

Gordon, D. S., & Platek, S. M. (2009). Trustworthy? The brain knows: Implicit neural responses to faces that vary in dark triad personality characteristics and trustworthiness. *Journal of Social, Evolutionary, and Cultural Psychology*, *3*(3), 182. http://dx.doi.org/10.1037/h0099323

Greenspan, S. (2008). *Annals of Gullibility: Why We Get Duped and How to Avoid It.* Westport, Connecticut: Praeger Publishers.

Harán, J. M. (2019, February 14). *When love becomes a nightmare: Online dating scams.* Retrieved from: https://www.welivesecurity.com/2019/02/14/love-becomes-nightmare-scams-apps-online-dating-sites/

Hehman, E., Sutherland, C. A. M., Flake, J. K., & Slepian, M. L. (2017). The unique contributions of perceiver and target characteristics in person perception. *Journal of Personality and Social Psychology*, *113*(4), 513–529. https://doi.org/10.1037/pspa0000090.supp (Supplemental)

Hess, U., Adams Jr, R. B., & Kleck, R. E. (2009). The face is not an empty canvas: how facial expressions interact with facial appearance. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *364*(1535), 3497–3504. doi:10.1098/rstb.2009.0165

Kee, A. W. A., & Yazdanifard, R. (2015). The review of the ugly truth and negative aspects of online dating. *Global Journal of Management and Business Research*.

Krumhuber, E., Manstead, A. S., & Kappas, A. (2007). Temporal aspects of facial displays in person and expression perception: The effects of smile dynamics, head-tilt, and gender. *Journal of Nonverbal Behavior*, *31*(1), 39–56. https://doi.org/10.1007/s10919-006-0019-x

Naylor, R. W. (2007). Nonverbal cues-based first impressions: Impression formation through exposure to static images. *Marketing Letters*, *18*(3), 165–179. https://doi.org/10.1007/s11002-007-9010-5

Pallant, J. (2016). *Spss survival manual: A step by step guide to data analysis using ibm spss* (6th ed.). Maidenhead, Berkshire, England: McGraw-Hill Education.

Rege, A. (2009). What's love got to do with It? Exploring online dating scams and identity fraud. *International Journal of Cyber Criminology*, *3*(2).

Sutherland, C. A., Rhodes, G., & Young, A. W. (2017). Facial image manipulation: A tool for investigating social perception. *Social Psychological and Personality Science*, *8*(5), 538–551. https://doi.org/10.1177/1948550617697176

Titus, R. M., & Gover, A. R. (2001). Personal fraud: The victims and the scams. *Crime Prevention Studies*, *12*, 133–152.

Todorov, A., Mandisodza, A. N., Goren, A., & Hall, C. C. (2005). Inferences of competence from faces predict election outcomes. *Science, 308*(5728), 1623–1626. DOI: 10.1126/science.1110589

Vandeweerd, C., Myers, J., Coulter, M., Yalcin, A., & Corvin, J. (2016). Positives and negative of online dating according to women 50+. *Journal of women & aging, 28*(3), 259–270. https://doi.org/10.1080/08952841.2015.1137435

Whitty, M. T. (2018). Do you love me? Psychological characteristics of romance scam victims. *Cyberpsychology, Behavior, and Social Networking*, *21*(2), 105–109. DOI: 10.1089/cyber.2016.0729

Whitty, M. T., & Buchanan, T. (2012). The online romance scam: A serious cybercrime. *CyberPsychology, Behavior, and Social Networking, 15*(3), 181–183. DOI: 10.1089/cyber.2011.0352

Whitty, M. T., & Buchanan, T. (2016). The online dating romance scam: The psychological impact on victims–both financial and non-financial. *Criminology & Criminal Justice*, *16*(2), 176–194.

Willis, J., & Todorov, A. (2006). First Impressions: Making Up Your Mind After a 100-Ms Exposure to a Face. *Psychological Science (0956-7976)*, *17*(7), 592–598. https://doi.org/10.1111/j.1467-9280.2006.01750.x