

Emotional responses to disfigured faces: the influences of perceived anonymity, empathy, and disgust sensitivity

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Abstract

Two experiments investigated self-reported emotional reactions to photographs of people with attractive, unattractive or structurally disfigured faces. In Experiment 1 participants viewing disfigured faces reported raised levels of sorrow and curiosity but not raised levels of negative emotions. In Experiment 2 there was more negative emotion and less positive emotion reported under conditions of relatively high anonymity, compared to low anonymity, specific to disfigured faces, suggesting that self-reports are influenced by social desirability. Trait empathy was associated with sorrow and negative emotions when viewing disfigured faces. Disgust sensitivity was associated with negative emotions and inversely associated with positive emotions. *(99 words)*

Keywords: facial disfigurement; disgust; empathy; emotion; perceiver

Introduction

According to the charity Changing Faces, one person in 111 in the UK today has a disfigurement to the face (Changing Faces, Face Equality Campaign, 2014). Disfigurement is defined as a state of persistent and significant alteration to an individual's appearance by disease, injury, or developmental disorder (Krishna, 2009). Disfigurement is associated with stigma and, in the words of Crocker, Major, and Steele (1998, p504) "a person who is stigmatised is ... devalued, spoiled or flawed in the eyes of others" (see also Dembo, Leviton, & Wright, 1975; Lawrence, Rosenberg, & Fauerbach, 2007). A disfigurement affecting the face has a particularly strong impact because of the importance of the face in social interaction; the direction of looking is normally towards the face of a conversational partner (e.g., the eye-tracking study of Vertegaal, Slagter, van der Veer, and Nijholt, 2001). Kendon (1967) explores several functions of attention to the face during social interaction, including turn-taking, shared attention, and detection of emotion. The face indicates a person's identity, age, emotion, and mood, and may even indicate a person's intelligence (e.g. Zebrowitz, Hall, Murphy, & Rhodes, 2002).

The importance of the face in social interaction implies that a person with facial disfigurement could be expected to invoke strong emotion in perceivers (e.g. Dovidio, Major, & Crocker 2000). There are a number of factors which suggest the likelihood of specific emotions and these will be considered in turn.

Anxiety and embarrassment can result when interaction partners do not know how to react, where to look, or how to hold a normal conversation (Heinemann, 1990). Hebl, Tickle, and Heatherton (2000) describe how most people can recall instances of "awkward moments" – clumsy words they wish they had not said - in interaction with a stigmatised individual. Further, people with facial disfigurement are generally perceived to be lacking in social skills and confidence (e.g. Eagly, Ashmore, Makhajani, & Longo, 1991; Feingold, 1992; Goode,

Ellis, Coutinho, & Partridge, 2008; Stevenage & McKay, 1999; Stone & Wright, 2012). This could readily become a self-fulfilling prophecy (e.g. Rumsey & Harcourt, 2012, p380).

Curiosity and surprise are natural consequences of the rarity of facial disfigurement (e.g. MacGregor, 1990). For example, Stevenage and Furness (2008) asked participants to watch a video of a conversation or to hold a conversation with a partner over a webcam. Recall of the contents of the conversation was poorer if the partner had a (fake) disfigurement, attributed to the seizing of attention by the disfigurement. Similarly, Madera and Hebl (2012) reported in an eye-tracking study that their participants paid particular attention to a facial disfigurement.

Strong emotional reactions, including disgust, repulsion, and anger, are likely to be invoked by the perception of a face which is particularly aesthetically unappealing (e.g., Giancoli & Neimeyer, 1983; Macgregor, 1953; Stone & Colella, 1996). Fear of contagious disease is proposed to be an evolved disposition (e.g. Dijker & Raeijmaekers, 1999) which should lead to avoidance of individuals with facial anomalies, such as rash, spots, or discolouration, which could be indicators of disease (e.g. Schaller & Neuberg, 2012).

On a more positive note, individuals may respond with empathy-based emotions including the sadness or distress that arises from the acknowledgment of suffering by members of a socially disadvantaged group, rather than the prejudice-based associations of dislike and aversion (e.g. Andreychik & Gill, 2012; Fultz, Schaller, & Cialdini, 1988). Similarly, some individuals may feel pity rather than aversion (e.g. MacGregor, 1953). When confronted by another person in distress, with no means of alleviating the distress, the perceiver may experience their own form of sadness, sorrow or distress.

Despite these reasons for expecting particular emotional reactions to the perception of an individual with a facial disfigurement, there is very little empirical evidence of the nature of the emotions most commonly and strongly experienced by the perceiver. One recent

exception is Shanmugarajah, Gaiend, Clarke, and Butler (2012) who reported that disgust was experienced when viewing a disfigured face. Experimental indication of an emotional reaction was reported by Blascovich, Mendes, Hunter, Lickel, and Kowai-Bell (2001) whose participants displayed more stress in interacting with an experimental confederate with a simulated birthmark on their face than the same confederate without a facial stigma, but this does not address specific emotions. Indirect evidence is offered by many studies showing that people with facial disfigurement report frequent experiences of negative attitudes (e.g. Clarke, 1999; Harcourt & Rumsey, 2008; Hearst & Middleton, 1997; Jowett & Ryan, 1985; Lanigan & Cotterill, 1989; Newell & Marks, 2000; Rumsey & Harcourt, 2004; Walters, 1997) and physical avoidance (Houston & Bull, 1994; Rumsey, Bull, & Gahagan, 1982). Again, though, these studies do not document the actual emotions experienced by the interaction partners. Some studies have observed reactions of anger or pity to a range of stigmas involving physical disability or disease, depending on whether the stigma is perceived as controllable (anger) or uncontrollable (pity), (Weiner, Perry, & Magnusson, 1988; Menec & Perry, 1998), but this does not address facial disfigurement specifically, and covers only a narrow range of emotions.

The lack of empirical evidence of the actual emotions experienced by perceivers is unfortunate as steps to reduce the problems experienced by people with facial disfigurement in social interaction can be beneficially informed by knowledge of the emotions that are usually invoked. While it must be recognised that the subjective interpretations placed on the behaviour of others by the individual with visible difference had a major influence on their perception of their interaction partner (e.g. Kleck & Strenta, 1980) these interpretations can be expected to rely, at least partly, on the actual behaviour of others.

The present study was designed to advance our understanding of the emotions experienced by a perceiver of a person with facial disfigurement. The basic design of the

research was to present participants with a set of faces in one of three categories: attractive, unattractive, and with facial disfigurement, and to ask for self-report of subjective experience of a set of 21 emotions organised for clarity of exposition into four subscales: Negative, Positive, Sorrow, and Curiosity.

Differences were predicted between the participants who viewed disfigured faces compared to the other two groups: higher levels of Negative, Sorrow and Curiosity emotions, and lower levels of Positive emotions. No specific prediction was made for differences between the emotions invoked by attractive and unattractive faces.

The unattractive faces were included in order to distinguish between the lack of attractiveness and the presence of disfigurement. Differences between unattractive faces, which lie within the range of normal, unaltered faces, and disfigured faces will help to delineate the impact of striking and persistent alteration to facial appearance.

Experiment 1 showed partial support for the predictions, but with unexpected results for the self-report of Negative emotions invoked by the perception of people with facial disfigurement. Experiment 2 investigated two potential explanations for this observation.

Experiment 1

Method

Participants.

Participants were recruited from members of the general public who attended the “Psychology for All” event in London in 2010. They comprised individuals from a variety of walks of life and ethnicity, all assumed to have some interest in some aspect of Psychology. There were 25 males and 82 females, and one participant who declined to specify their gender. They were personally approached by the researcher and invited to participate. If they consented, they were randomly allocated to one of three conditions defined by the type of faces they were shown: attractive, unattractive and disfigured. Randomisation was achieved

by shuffling the pack of questionnaires and handing each participant the next questionnaire in the pile. There were 31 participants in the attractive faces condition, 38 participants in the unattractive faces condition, and 37 participants in the disfigured faces condition. Gender ratio and mean age did not differ appreciably between the face types. Goode et al (2008) reported that the prejudice displayed towards people with facial disfigurement was generally equivalent regardless of age, gender, education level, and socio-economic status, in a structured sample of 1000 adults, so the presence of more females than males is not likely to have affected the results.

Design.

Experiment 1 used a between-participants design. The independent variable was the type of face presented to participants: attractive, unattractive or disfigured. The dependent variables were the emotions of which participants were asked to report their subjective experience.

Materials.

The attractive faces and unattractive faces were selected from a database of over 30 faces obtained some 15 years ago. All individuals had given their permission for their faces to be used in research. All represent white Caucasian individuals in their twenties, as did the disfigured faces, so as to avoid the introduction of any extraneous factors distinguishing among the groups of faces. All faces were presented in black and white, facing towards the camera, with a calm neutral expression. None of the faces showed any jewellery or piercings and minimal clothing was visible around the collar line. The faces had previously been rated on attractiveness on a scale of 1 to 9 by 20 participants, none of whom took part in the present experiment. The two most attractive and unattractive, male and female faces, were selected. These differed on attractiveness: attractive faces $M = 7.17$, $SD = 0.11$; unattractive faces $M = 2.45$, $SD = 0.34$; effect size measured as Cohen's $d = 1.86$.

The disfigured faces were those used in Stone and Wright (2012). The existing research literature on perceptions of people with facial disfigurement usually considers only skin blemishes, e.g. small scars or birthmarks, usually for convenience as these types of disfigurement can be simulated using make-up. However, these types of disfigurement may not invoke the same emotion as more striking structural alteration of appearance. Therefore, in the present study, the faces with disfigurements represented structural disfigurement of a type that could not be concealed with the use of make-up. This was done to avoid participant assumptions and consequent reactions to a face presenting a disfigurement that could have been concealed but the individual has chosen not to do so. Photographs of patients were obtained from the Facial Surgery Research Foundation, two male and two female, one of each gender with a disfigurement to the eyes and one to the mouth and cheek. To protect their identity but preserve the disfigurement the faces were morphed with the faces of strangers obtained from the internet using the GIMP software which allows two images to be overlaid and merged. The stranger faces were carefully selected to match on age, skin tone, and other characteristics before merging. Ten students of the University of East London were shown the original faces and the created faces in a mixed set and asked to select the original faces; they were unable to do so. Figure 1 displays the disfigured faces.

Figure 1

The questionnaire contained a list of 21 emotion words, including the SCARED emotions of sorrow, curiosity, anxiety, repulsion, embarrassment and distress (Partridge, 1997, p72); the basic emotions of anger, fear, disgust, happiness, sadness, and surprise; and another nine words representing contrasting emotions: indifference, and the positive emotions of joy, relaxation, attraction, comfort, calm, pleasure, confidence, and delight. These were grouped into four categories of Negative (anger, fear, disgust, anxiety, embarrassment, and

repulsion), Sorrow (sorrow, sadness, and distress), Curiosity (curiosity, surprise, inverse of indifference) and Positive (the remainder).

Procedure.

Participants were approached one at a time by one of two researchers and invited to participate in the study. They were given a brief description of the task, including that it was designed to measure our emotional reactions to different types of faces, and specifying that “The faces may span the full range of human appearance”. If they agreed to proceed they were given a questionnaire randomly selected from the three face types. At the top were the 4 faces in their set, each measuring approximately 2.5cm wide and 3.2cm high, presented side by side in one of two different sequences. The list of emotion words followed, next to each was the numbers 1 to 9, and participants were asked to circle the number that represented “what you feel when you look at these faces”. They were asked not to think too long but to give their first impressions. Participants returned their questionnaire to the researcher when they had finished and were given a brief verbal debriefing with the opportunity to ask further questions.

Ethical considerations: The experiment was approved according to the ethical procedures of the University of East London.

Results

Missing data amounted to less than 0.1% and was not replaced. The data for some of the emotions did not show a normal distribution, but in all cases where this occurred there was a similar pattern of skew in all three conditions so calculations of effect size were appropriate.

The score for each emotion subscale was calculated as the mean score of the emotions comprising the subscale. The reliability of the emotion subscales was good: Cronbach’s

Alpha was 0.84, 0.88, 0.85, and 0.72 for the subscales of Positive, Negative, Sorrow, and Curiosity, respectively.

Figure 2

Figure 2 and Table 1 show the level of self-reported arousal of the emotions for each of the three face types. Inspection of the data reveals that the Positive emotions did not differ to an appreciable degree among the face types, but the Negative emotions were lower for attractive faces than unattractive or disfigured faces, which were similar to each other. In contrast, the Sorrow and Curiosity emotions were higher for disfigured faces than unattractive or attractive faces, which were similar to each other.

Table 1

Discussion

This pattern of results is partially consistent with the predictions. The Sorrow and Curiosity subscales were invoked more strongly by the disfigured faces than either attractive or unattractive faces, as predicted. However, the Negative subscale showed a different pattern, being invoked to an equivalent degree by unattractive and disfigured faces. There was no appreciable difference between disfigured faces and the rest in the strength of Positive emotions.

The difference between the Negative, Sorrow and Curiosity subscales is interesting and two plausible explanations will be advanced. One, the participants may have experienced high levels of empathy for the people depicted with disfigured faces, so that their subjective experience was more of Sorrow emotions than of Negative emotions. This would explain the lower-than-expected level of Negative emotion invoked by disfigured faces. Empathy can be defined as the ability to “tune in” to someone else’s experiences, thoughts and attitudes, and to be able to relate to their emotions and feelings. The affective component of empathy can lead to concern or compassion for another person’s distress (e.g., Baron-Cohen &

Wheelwright, 2004) so empathy may play an important role in perceivers' reactions of Sorrow emotions towards someone with a facial disfigurement.

Two, participants shown disfigured faces may have suppressed their report of emotions in the Negative subscale in accordance with perceived social desirability. This would be consistent with Goode et al (2008) who reported that prejudicial beliefs about people with facial disfigurement were not apparent in an overt evaluation but were revealed by an Implicit Association Test (a measure of implicit beliefs that is hard for the participant to fake). Other empirical studies suggest that the display of prejudicial attitudes towards social groups in general is limited to some degree by the perception that this is normatively unacceptable. For example, Kurzban and Leary (2001) note that exclusion requires not only the presence of prejudice but also a perception that it is socially acceptable to exclude a member of a certain subgroup from social interaction. Similarly, Stangor and Crandall (2000) noted the role of social consensus in the processes of stigmatization. Sorrow and Curiosity emotions are more socially acceptable and so self-reporting of these emotions is less likely to be suppressed, and indeed, these emotions were reported to be invoked more strongly by disfigured faces than by unattractive faces. Thus, the under-reporting specifically of Negative emotions for reasons of perceived social desirability is a potential explanation for the pattern of results observed in Experiment 1. Although participants were not asked to reveal their names or any identifying information, they handed back their questionnaires in person to the researchers, and so the social desirability explanation seems plausible.

Experiment 2

Experiment 2 aimed to investigate the two potential explanations, empathy and social desirability, for the similarity in the levels of emotions in the Negative subscale invoked by unattractive and disfigured faces in Experiment 1, contrary to the prediction that disfigured faces would invoke higher levels of these emotions.

If the empathy explanation were correct then participants with high empathy would tend to experience Sorrow rather than Negative emotions when viewing disfigured faces. Scores on the Empathizing Quotient (EQ) scale of Baron-Cohen and Wheelwright (2004) should correlate positively with scores on the Sorrow subscale, and negatively with scores on the Negative subscale, for participants viewing disfigured faces, but not for participants viewing other face types.

If the social desirability explanation was correct then a deliberate manipulation of perceived anonymity should moderate reports of Negative emotion such that lower levels of Negative emotion would be reported in a condition in which participants had perceived relatively low anonymity (high accountability). Emotions in the Positive, Sorrow, and Curiosity subscales are more socially acceptable and less likely to be manipulated, so a weaker prediction was for lower levels of Sorrow and for higher levels of Positive and Curiosity emotion in the low anonymity condition.

Anonymity was manipulated in Experiment 2 by varying the circumstances under which participants returned their questionnaires to the experimenter. In the low anonymity condition, when participants were given their questionnaires, they were asked to complete them in their own time and to return them to the researcher in person. It is reasonable to assume that they would consequently have felt a lower degree of anonymity and a greater sense of accountability for their responses (even though the responses were recorded anonymously). In contrast, participants in the high anonymity condition were asked to post their questionnaires in a box for weekly collection, under which circumstance it is reasonable to assume they would have felt higher anonymity.

No manipulation check was performed because of the potential to bias participants' responses. For instance, Trafimow and Rice (2009) and Kidd (1976) raised concerns about potential effects on the dependent measure of a prior manipulation check. In the present

experiment, if participants had been asked about their perceptions of anonymity as the questionnaires were handed out this could have raised concerns about anonymity in the high anonymity condition, thus defeating the purpose of the study. If the manipulation check had been inserted at the end of the questionnaires then it could have had a similar effect and prompted participants to alter their responses or to withhold their data. If the manipulation check were conducted separately after the questionnaires were returned then the effect of the manipulation might have dissipated (e.g., Perdue & Summers, 1986; Trafimow & Rice, 2009). There are also risks that the manipulation check could be influenced by the process of gathering the dependent measures (e.g., Kidd, 1976; Perdue & Summers, 1986), or that participants would be unable or reluctant to accurately report the effects of the manipulation (Perdue & Summers, 1986), rendering the results of the manipulation check of little value.

Instead of a manipulation check, the interpretation of the results of Experiment 2 relies on the logic that if there is no difference between the low and high anonymity conditions other than the means of returning the questionnaires, any observed difference in the results can be inferred as arising from this variation in the procedure. The most plausible explanation is the participants' perception of anonymity, and Sawyer, Lynch and Brinberg point out that a manipulation check has little value when the link between the manipulation and the underlying construct of interest is strong. Perdue and Summers note that the absence of a manipulation check does not invalidate a causal inference unless there is an alternative explanation which needs to be ruled out, but there is no obvious alternative explanation in the present study. Also, Srenthal, Tybout and Calder (1987) argue that the comparative approach, in which a theory is supported if it offers a better explanation for the observed pattern of results than an alternative theory, is superior to reliance on manipulation checks.

The Disgust Propensity and Sensitivity Scale (DPSS) of Overveld, Jong, and Peters (2009) was administered to participants following recent work linking the emotion of disgust

empirically (e.g., Shanmugarajah et al, 2012) and theoretically (e.g., Schaller & Neuberg, 2012) with the perception of disfigured faces. Disgust Sensitivity measures the degree to which a person tends to experience aversive emotion when presented with a stimulus arousing the emotion of disgust. Disgust Propensity measures the likelihood that disgust will be invoked by a normatively disgusting stimulus. The prediction was that Disgust Sensitivity and Propensity would be positively correlated with the Negative subscale in the group of participants who viewed disfigured faces, but not in the other groups. Considering that the experience of negative emotions might preclude the experience of positive emotions, a weaker prediction was also made for an inverse correlation of Disgust Sensitivity with the Positive subscale.

Method

Participants.

Participants were an opportunity sample recruited from students at the University of East London and others who were recruited through social networks. The low and high anonymity conditions each comprised 60 participants, with 20 participants receiving each face type, randomly allocated by shuffling the pack of questionnaires and handing each participant the next questionnaire in the pile. Overall there were 54 females and 66 males, roughly evenly distributed among the anonymity x face type groups. Mean age did not differ among the face types in the low anonymity condition. Unfortunately the ages were not all recorded in the high anonymity condition but this does not raise concern as prejudice towards people with facial disfigurement is generally equivalent regardless of age (Goode et al, 2008).

Design.

The design was similar to Experiment 1 with the addition of a second between-participants factor of anonymity with two levels, high and low, differentiated by the means of

returning questionnaires to the experimenter. Thus Experiment 2 had a 3 (face type; attractive, unattractive, disfigured) x 2 (anonymity: high, low) between-participants design.

Materials.

The same materials were used as in Experiment 1 with the addition of two questionnaires. The Disgust Propensity and Sensitivity Scale (Overveld et al, 2009) was completed by participants after they had reported on their experienced emotions. The scale poses 12 questions, 6 in the Disgust Propensity scale which measures how easily the emotion of disgust is elicited, and 6 in the Disgust Sensitivity scale which measures the unpleasantness of the experience of disgust. Each question asks participants to think about “how often it is true for you” with responses of never, rarely, sometimes, often, and always. Examples of questions on the Disgust Sensitivity scale are “When I feel disgusted, I worry that I might pass out” and “Disgusting things make my stomach turn”. Overveld et al (2009) reported an acceptable level of reliability for the subscale of propensity (Cronbach’s alpha = 0.73) and sensitivity (Cronbach’s alpha = 0.60).

The Empathizing Quotient (EQ) scale (Baron-Cohen & Wheelwright, 2004) was completed by participants as their final task. The scale consists of 40 questions relevant to the measuring of individual differences in empathy in the general population. Each question asks participants to report their agreement with a statement with response options from strongly agree to strongly disagree and included statements such as ‘I often find it difficult to judge if something is rude or polite’ and ‘seeing people cry doesn’t really upset me’ (both reverse scored). The reliability of the EQ was good, Cronbach’s alpha = 0.92.

Procedure.

This was similar to Experiment 1, with the exception of the method for returning the questionnaires to the experimenter. Participants were also asked whether they had any personal acquaintances with a facial disfigurement.

Results

Missing data amounted to less than 0.1% and was not replaced. The data for some emotions did not show a normal distribution, but in all cases where this occurred there was a similar pattern of skew in all three conditions so calculations of effect size were appropriate.

The reliability of the emotion subscales was good except for Curiosity: Cronbach's Alpha was 0.88, 0.73, 0.77, and 0.28 for the subscales of Positive, Negative, Sorrow, and Curiosity, respectively. Detailed examination of the data did not reveal any obvious reason for the lack of reliability of the Curiosity scale, especially in comparison with its reliability in Experiment 1. One possibility is that the words curiosity, surprise, and indifference may have been interpreted with different degrees of positivity and negativity by different participants. A tentative conclusion is that the terms are not necessarily well related and that a different set of words should be considered for future research. The Curiosity subscale will be analysed as in Experiment 1 for consistency but should be interpreted with caution.

Reliability of the Sensitivity subscale of The Disgust Propensity and Sensitivity Scale (Overveld et al, 2009) was acceptable, Cronbach's alpha = 0.69. However, reliability of the Propensity subscale was not acceptable, Cronbach's alpha = 0.35, and so this scale was not further analysed. Reliability of the Empathy Quotient was acceptable, Cronbach's alpha = 0.75.

Of the participants who viewed disfigured faces, only six claimed to have an acquaintance with a facial disfigurement, which is insufficient to perform a comparison of emotional reactions according to personal knowledge of someone with a facial disfigurement.

Figure 3 and Table 2 reveal a different pattern of results in the low anonymity and high anonymity conditions. In the low anonymity condition the main differences lay between attractive faces and the rest; participants reported lower levels of Negative and Sorrow emotion, and higher levels of Positive and Curiosity emotion, for the attractive faces than the

unattractive and disfigured faces. Disfigured faces differed from unattractive faces only on Curiosity which was highest for disfigured faces, then attractive faces, and lowest for unattractive faces, which may reflect the perceived rarity of these faces types.

In contrast, and as predicted, the main differences in the high anonymity condition lay between disfigured faces and the rest. Participants reported higher levels of Negative, Sorrow, and Curiosity emotion, and lower levels of Positive emotion, to disfigured faces, although for Curiosity the effect size was somewhat smaller. Unattractive and attractive faces did not differ appreciably on any emotion.

Figure 3

Table 2

A direct comparison of low and high anonymity conditions is also of interest, for each face type and emotion. For the disfigured faces, participants in the low anonymity condition reported higher levels of Positive emotions, lower levels of Negative emotions, and lower levels of Sorrow emotions, compared to the high anonymity condition. The attractive faces invoked more Positive emotions in the low anonymity condition than in the high anonymity condition; this seems likely to reflect a stereotypical response given the favourable reception normally given to attractive faces (e.g. Eagly et al, 1991). The unattractive faces invoked more Negative emotions and less Curiosity emotions in the low anonymity condition, and again, this seems like plausible stereotypical responding given the general perception of unattractive faces (e.g. Eagly et al, 1991).

Correlations were examined between scores on the Empathy Quotient and scores on the Sorrow and Negative subscales for each of the three face types; please refer to Table 3. EQ scores were positively correlated with Sorrow scores in the group of participants who viewed disfigured faces, in contrast to the other groups in which the correlations were smaller and negative in direction. Further examination showed that the correlation between EQ and Sorrow in the group viewing disfigured faces was strong only for the low anonymity group

[$r(18)=0.53$] and not for the high anonymity group [$r(18)=0.03$]. There were no correlations between scores on the EQ and scores on the Negative subscale relevant to the hypotheses.

Table 3

Correlations were examined between scores on the Disgust Sensitivity scale and all four emotion subscales for the three face types; please refer to Table 3. For the disfigured faces, Disgust Sensitivity was correlated with Negative and Sorrow emotions and inversely correlated with Positive emotions. For the attractive and unattractive faces, Disgust Sensitivity was not correlated with any emotion subscale.

Discussion

The pattern of results supports the social desirability explanation rather than the empathy explanation. Manipulation of the level of anonymity moderated the self-report of emotion such that participants who viewed disfigured faces in the low anonymity condition, compared to those in the high anonymity condition, reported lower Negative emotions, lower Sorrow emotions, and higher Positive emotions. In the low anonymity condition the levels of invoked emotion distinguished attractive faces from the rest, with no difference between unattractive and disfigured faces on any emotion subscale except Curiosity. In contrast, in the high anonymity condition the levels of invoked emotion distinguished disfigured faces from the rest on every emotion except Curiosity; disfigured faces invoked lower Positive emotions, higher Negative emotions, and higher Sorrow emotions. For comparison with Experiment 1: the Negative subscale of Experiment 1 behaved like the low anonymity condition of Experiment 2, while the Sorrow subscale of Experiment 1 behaved like the high anonymity condition of Experiment 2, as did the Curiosity subscale though to a lesser extent. It appears that the participants in Experiment 1 may have been somewhat motivated by social desirability motives, but less strongly than in the low anonymity condition of Experiment 2.

It is relevant to note that participants in the low anonymity condition were not simply reporting lower Negative emotions than those in the high anonymity condition to all face types but were making tailored adjustments to their responses; they reported lower Negative emotions for disfigured faces but higher Negative emotions for unattractive faces. It appears that the influence of social desirability on self-report of emotional experience was triggered by the perception of striking and persistent difference.

As predicted, the scores on the Empathy Quotient were positively correlated with Sorrow emotions in the group of participants who viewed the disfigured faces but not in the other groups. Thus, individual differences in levels of empathy also appear to have influenced the self-reported emotions invoked by disfigured faces. However, the empathy explanation for the failure to observe higher levels of Negative emotions in the participants who viewed disfigured compared to unattractive faces in Experiment 1 was not supported. The specific prediction that higher EQ scores would be associated with higher Sorrow scores was observed, but the prediction that higher EQ scores would be associated with lower Negative scores was not.

Further evidence against the empathy explanation was that EQ scores correlated with Sorrow only in the low anonymity group and not in the high anonymity group. So, it appears that participants may have reacted with self-reported Sorrow if they were high in empathy but only under conditions of low anonymity; in other words, the influence of empathy on experienced emotion seems to have been moderated by perceived anonymity.

In some ways the emotions in the Curiosity subscale seem to be an exception, as the difference between disfigured and unattractive faces was stronger in the low anonymity condition than in the high anonymity condition. Perhaps this stems from the perception that curiosity is a socially acceptable emotion to experience when looking at disfigured faces, so reports were enhanced in the low anonymity condition but not in the high anonymity

condition. This interpretation should be treated with caution as the Curiosity subscale was not reliable in Experiment 2.

Disgust sensitivity moderated emotional responses to disfigured faces but not attractive or unattractive faces. As predicted, higher levels of disgust sensitivity were associated with higher levels of invoked Negative and Sorrow emotions, and lower levels of invoked Positive emotions. Thus, it appears that Disgust Sensitivity does not moderate the experience only of disgust but also the experience of a broader range of emotions.

General Discussion

The original predictions were for higher Negative, Sorrow and Curiosity emotions, and lower Positive emotions, in the participants who viewed disfigured faces compared to those who viewed attractive or unattractive faces. These predictions were mainly supported by the results of Experiments 1 and 2.

The emotions in the Sorrow subscale were invoked to a higher degree by disfigured faces than by attractive or unattractive faces in Experiment 1 and the high anonymity condition of Experiment 2, and also to a higher degree than attractive faces in the low anonymity condition of Experiment 2. The only condition in which the Sorrow emotions were not invoked more strongly by disfigured faces was in comparison with the unattractive faces in the low anonymity condition of Experiment 2, in which it is inferred that reports of Sorrow were suppressed for social desirability motives.

The Curiosity subscale was invoked more strongly by disfigured faces than by attractive or unattractive faces in all conditions though this was less strongly apparent in the high anonymity condition of Experiment 2.

The major deviation from the predicted pattern of results concerns the Negative emotions. These were invoked more strongly by disfigured faces than by attractive or unattractive faces in the high anonymity condition of Experiment 2, but were invoked to an

equivalent degree by disfigured and unattractive faces in Experiment 1 and in the low anonymity condition of Experiment 2. The influence of perceived social desirability was apparent in the comparison of the low and high anonymity conditions of Experiment 2: participants who viewed disfigured faces under conditions of low anonymity reported less Negative emotion, less Sorrow, and more Positive emotion. The straightforward conclusion was that participants in the low anonymity condition who viewed disfigured faces had suppressed the report of their automatic emotional reactions in order to be able to give more socially desirable responses.

The results of Experiment 2 also suggested that individual differences in Empathy and Disgust Sensitivity had influenced participant responses. In the group of participants who viewed disfigured faces (but not the other groups), those with higher scores on the Empathy Quotient also reported experiencing more Sorrow emotion. A highly empathic individual will tend to relate to the emotional experiences of others; in the present study, if participants assumed that the individuals depicted with facial disfigurement were suffering as a result of their appearance this would tend to generate feelings of sorrow and distress in the participant (e.g. Andreychik & Gill, 2012; Fultz et al, 1988). It is interesting to note that this correlation was apparent only in the low anonymity condition. One possible explanation is that the process of empathising with the depicted individuals required some commitment of resource and that this occurred only under the social desirability motivation in the low anonymity condition.

Disgust sensitivity refers to the degree to which a person tends to experience aversive emotion when presented with a stimulus arousing the emotion of disgust. In the group of participants who viewed disfigured faces (but not the other groups), disgust sensitivity was related to the experience of higher levels of Negative emotions, higher levels of Sorrow, and lower levels of Positive emotions. This replicates and extends the work of Shanmugarajah et

al (2012) who reported that individual levels of disgust sensitivity were related to the degree of disgust invoked by the perception of a disfigured face. The present results suggest that the influence of individual differences in disgust sensitivity may not be restricted to the emotion of disgust but may apply also to other emotions including a range of aversive, positive and empathic emotions.

It is interesting to consider the mechanism by which the low anonymity condition of Experiment 2, and the somewhat similar conditions of Experiment 1, might have influenced the self-report of emotion. Gawronski and Bodenhausen (2006) explain the distinction between associative evaluations which lead to implicit attitudes and propositional evaluations which lead to explicit attitudes. The associative evaluation is an automatic affective reaction activated by the invoking stimulus. It does not require an intention to evaluate the stimulus and does not imply conscious agreement with the evaluation. Associative evaluations can be activated in people who do not endorse them, simply as the result of frequent associations of the stimulus with a particular type of evaluation in the media and popular culture (Devine, 1989). In the present case, this would imply that an implicit negative attitude towards people with facial disfigurement can be activated in someone who values the concepts of equality and does not personally agree with the prejudicial evaluation.

A propositional evaluation is generated by a reflective process that takes into account a relevant associative evaluation and compares it to other propositions, knowledge and beliefs. If a conflict is found, for example, between a negative associative evaluation and propositions along the lines of “I do not really want to avoid people with facial disfigurement” or “it is bad to be prejudiced” then the associative evaluation may not be endorsed. A propositional evaluation usually requires consistency with other concurrently activated propositions; in the present study, these other propositions might have included “I am being observed and I want to make a good impression”. So, the contents of a

propositional evaluation will depend on which other propositions are concurrently activated (Devine, 1989). The intentional activation of other propositions that counteract the effect of the automatic association could lead to the construction of an attitude which the individual is happy to endorse.

Applied to the results of the present study, these concepts suggest that participants in the low anonymity condition of Experiment 2 may have activated propositions concerned with social desirability and so generated modified self-reports of their emotional experience. These self-reports differed from the high anonymity condition, in which social desirability motivations were less likely to be invoked, and in which self-reported emotions were generally more negative and less positive. It is inferred that participants tended to give reflexive judgments in the high anonymity condition but elaborated reflective judgments in the low anonymity condition. This is consistent with Goode et al (2008) who reported that prejudicial beliefs about people with facial disfigurement were not apparent in an overt evaluation but were revealed by an implicit measure.

Pryor, Reeder, Yeadon, and Hesson-McInnis (2004) proposed a conceptually similar dual-process model in which reflexive (automatic) reactions can be countered by reflective (thoughtful) reactions to a stigmatised individual. By studying the tendency to approach or to avoid a stigmatised individual over time intervals of a few seconds, Pryor et al (2004) proposed that immediate reactions are governed by the reflexive system, which can be altered later by the reflective system.

The model proposed by Devine (1989) suggests that with practice, personal values for fairness and inclusivity could become more readily accessible and stronger compared to the automatic, reflexive associations. Then an individual who regularly interacts with one or more acquaintances who have a disfigurement would become more fluent at overcoming any automatic emotional negativity. The meta-analysis by Pettigrew and Tropp (2006) confirms the

predictions of inter-group contact theory that contact has a powerful effect in reducing prejudice and discrimination. No research could be located that examined this question specifically for individuals with facial disfigurement. There is no reason to suppose that contact theory would not apply but it should be noted that levels of prejudice were relatively high for facial disfigurement compared to other factors including race and disability (Stone & Wright, 2012, 2013). The application of contact theory to individual with facial disfigurement would be an interesting line for future research.

The results of the present study are consistent with the observation in Stone and Wright (2012) that participants who perceived a stronger social norm for inclusion and equality for people with facial disfigurement also reported less prejudicial perceptions of their character traits and abilities. In the present study the perceived social norm was made more relevant to participants under conditions of relatively low anonymity and this resulted in lower reports of negative emotional experience. The direct manipulation of the influence of social norms in the present study permits a causal inference suggesting that strengthening social norms could be effective in promoting more positive explicit evaluations of people with facial disfigurement. Kurzban and Leary (2001) note that stigmatization requires not only the presence of prejudice but also a perception that it is socially acceptable to exclude a member of a certain subgroup from social interaction. Thus, lessening this perception of socially acceptable exclusion would reduce the stigma experienced by people with facial disfigurement. However, it is important to exercise caution, given reports that an attempt to reduce discrimination could backfire and lead to more discrimination against a member of a stigmatised group. For example, Vourauer (2012) suggests that individuals who are alerted to the possibility that they hold prejudicial views may react by exercising caution which can lead to behaviour that seems aloof and unfriendly, or even by enhancing their automatic stereotyping.

Grandfield, Thompson, and Turpin, (2005) observed that it is important to understand the emotions experienced by the general public in regard to people with facial disfigurement so that interventions can be appropriately designed to help those with facial disfigurement to cope with the reactions of others and to help others to learn how to control their own emotions. The results of the present study demonstrate that empathy-based emotions are strongly invoked, especially in highly empathic individuals. Although empathy emotions can detract from the fluency of an interaction they are not associated with withdrawal and avoidance and so encouragement of these emotions may lead to more active engagement with people with facial disfigurement.

On a darker note, individuals higher in disgust sensitivity tend to react with more negative emotion, and some means to help individuals to combat or to cope with this automatic reaction might be useful in reducing discrimination. It is likely that the aversive reactions are due to unfamiliarity with the visual appearance of facial disfigurement so that increased familiarity would lead to a reduction in aversive reactions (and this is predicted by the contact hypothesis).

Some limitations of the present study should be noted. Participants simply viewed photographs and were not led to believe they would be asked to interact with the target individuals. Consequently, their emotional reactions may have been somewhat weaker than if they were asked to contemplate contact, although negative emotions (and fear, disgust and repulsion) were reported to a high degree under conditions of high anonymity. Future research could lead participants to anticipate actual contact to discern the effect of expectation. No measure of anxiety was captured, but future studies might find that individual differences in the tendency to experience social anxiety would moderate emotional reactions. The Negative emotion scale included elements of aversion and anxiety, which might have been better as separate scales. The emotion questionnaires could be improved by

ensuring equal numbers of individual emotions in the different categories and by including a new category of Anxiety.

This study examined the impact of facial disfigurement representing striking and persistent alteration to the appearance of a face. Different results might have been obtained from utilising images which represent relatively superficial skin blemishes, birth marks or scars.

In conclusion, this study adds to the literature by offering empirical data, previously lacking, concerning the emotions most strongly invoked by the perception of people with facial disfigurement. These emotions are moderated by individual differences in empathy and disgust sensitivity. The results of this study suggest that individuals may alter their self-report of their emotional reactions to a person with facial disfigurement to conform to notions of social desirability.

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Table 1: means (and standard deviations) for the emotion subscales for the three face types. Superscripts denote substantial differences between groups. Effect size is calculated as Cohen's D (difference between the means divided by the pooled standard deviation). Larger effect sizes (≥ 0.6) are in bold.

| | Attractive | Unattractive | Disfigured | Unattract – attractive effect size | Disfigured – unattract effect size |
|-----------|-----------------------------|-----------------------------|-----------------------------|--|--|
| Positive | 3.62 ^a (1.36) | 3.36 ^a (1.35) | 3.08 ^a (1.08) | -0.19 | -0.23 |
| Negative | 2.12 ^a (1.28) | 3.18 ^b (1.67) | 3.39 ^b (1.80) | 0.67 | 0.12 |
| Sorrow | 2.82 ^a (1.94) | 3.76 ^a (2.27) | 5.29 ^b (1.99) | 0.43 | 0.68 |
| Curiosity | 3.27 ^a (1.70) | 3.10 ^a (1.18) | 6.05 ^b (1.50) | -0.12 | 1.48 |

Table 2: Mean (and s.d.) of subjectively experienced emotion invoked by attractive, unattractive and disfigured faces in the low and high anonymity conditions of Experiment 2. Superscripts indicate substantial differences among face types. Effect size is calculated as Cohen's d; larger effect sizes (≥ 0.6) are in bold.

| | | Attractive | Unattractive | Disfigured | Unattract – attractive effect size | Disfigured – unattract effect size |
|------------------|-------------------|-------------------|-------------------|-------------------|--|--|
| Positive | | | | | | |
| | Low | 6.46 ^a | 3.62 ^b | 3.22 ^b | -1.58 | -0.44 |
| | anonymity | (1.27) | (0.88) | (0.92) | | |
| | High | 4.60 ^a | 3.96 ^a | 2.48 ^b | -0.44 | -1.01 |
| | anonymity | (1.58) | (1.31) | (1.23) | | |
| | Anon. effect size | 1.09 | -0.30 | 0.65 | | |
| Negative | | | | | | |
| | Low | 2.73 ^a | 4.38 ^b | 4.08 ^b | 1.23 | -0.23 |
| | anonymity | (1.09) | (1.02) | (1.56) | | |
| | High | 3.13 ^a | 3.05 ^a | 5.02 ^b | -0.06 | 1.18 |
| | anonymity | (1.42) | (1.41) | (1.32) | | |
| | Anon. effect size | -0.31 | 0.95 | -0.63 | | |
| Sorrow | | | | | | |
| | Low | 2.92 ^a | 4.80 ^b | 4.73 ^b | 1.06 | -0.03 |
| | anonymity | (1.40) | (1.61) | (2.51) | | |
| | High | 3.47 ^a | 3.77 ^a | 6.63 ^b | 0.16 | 1.30 |
| | anonymity | (1.85) | (1.98) | (1.29) | | |
| | Anon. effect size | -0.34 | 0.56 | -0.87 | | |
| Curiosity | | | | | | |
| | Low | 4.33 ^a | 3.18 ^b | 5.38 ^c | -0.98 | 1.32 |
| | anonymity | (1.07) | (0.99) | (1.47) | | |
| | High | 4.75 ^a | 4.47 ^a | 5.40 ^a | -0.20 | 0.60 |
| | anonymity | (1.34) | (1.46) | (1.52) | | |
| | Anon. effect size | -0.34 | -0.92 | -0.01 | | |

Table 3: correlations between scores on the Empathy Quotient / Disgust Sensitivity scales and the emotion scales, separately for each face type. Moderate and large correlations (coefficient ≥ 0.4) are shown in bold.

| | Empathy quotient | | | Disgust Sensitivity | | |
|-----------|------------------|--------------|-------------|---------------------|--------------|--------------|
| | Attractive | Unattractive | Disfigured | Attractive | Unattractive | Disfigured |
| Positive | 0.05 | -0.02 | -0.14 | 0.12 | -0.05 | -0.51 |
| Negative | -0.48 | -0.25 | 0.18 | 0.35 | -0.08 | 0.45 |
| Sorrow | -0.28 | -0.34 | 0.41 | 0.34 | -0.02 | 0.42 |
| Curiosity | -0.20 | -0.16 | 0.03 | 0.14 | -0.07 | -0.02 |

Figure 1



Figure 1: disfigured faces used in Experiment 1 and 2.

Figure 2

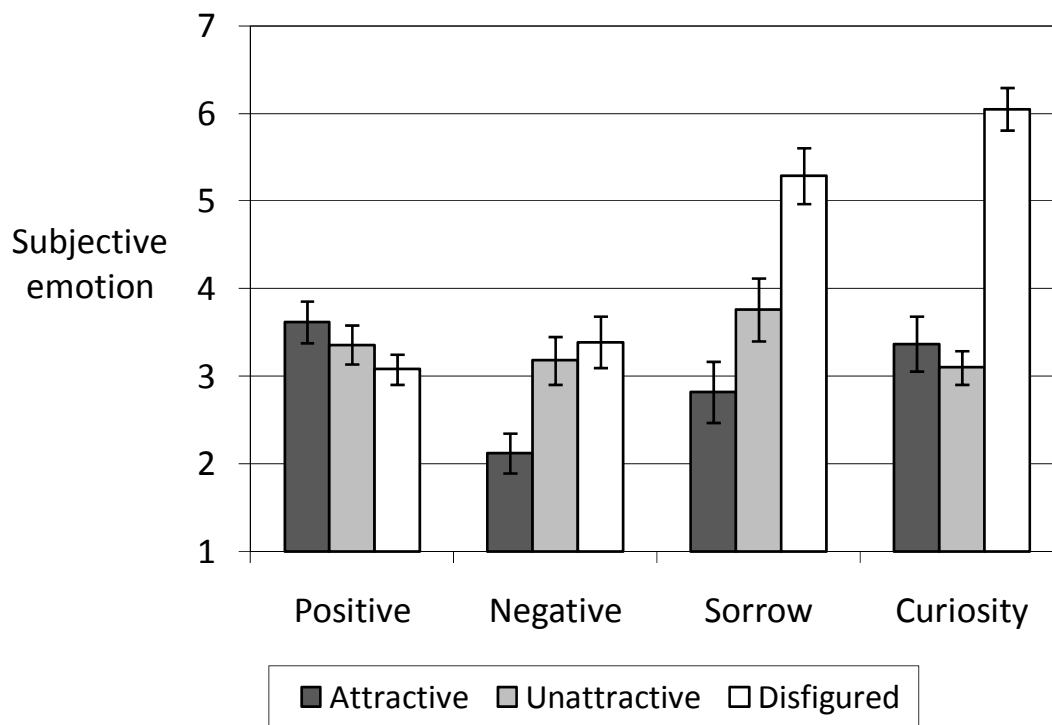


Figure 2: Self-report of emotional experience by face type in Experiment 1.

Bars represent standard errors.

Figure 3

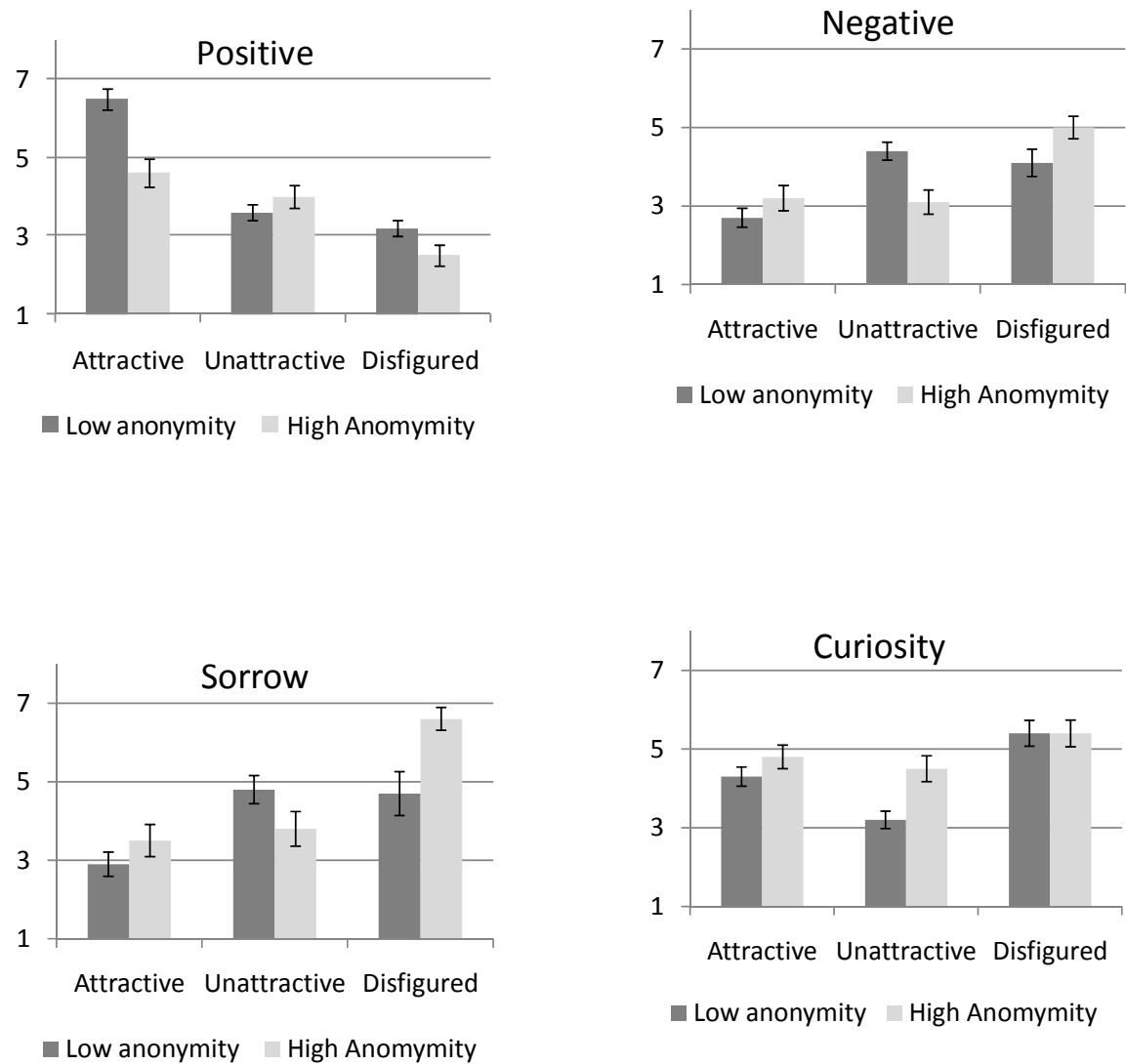


Figure 3: Self-report of emotional experience by face type in the low and high anonymity conditions of Experiment 2. Bars represent standard errors.