DECODING EMOTIONAL EXPERSSIONS: INTERACTION OF PERCEIVED RACE AND IMPLICIT RACIAL PREFERENCES

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Two experiments investigated whether negative attitudes towards an out-group interferes with perception of emotional expressions on faces of differing ethnicity. Participants' ability to selectively process either emotional or racial information was assessed using the Garner Interference Task (GIT). The stimuli consisted of photographs of Scandinavian-appearing (s) or Middle-Eastern-appearing (ME) men expressing either happiness or anger. Participants either classified the faces according to emotional expression, or according to apparent race. To assess attitudes towards Middle-Easterners and Scandinavians, participants performed a Swedish-Moslem IAT. The emotion-GIT revealed interference from ethnicity, which also interacted with the IAT such that those with low IAT scores (ME preference) showed greatest interference for angry ME faces whereas those with high IAT scores showed a facilitation for S happy faces. Emotional expression generally did not interfere with processing in the race-GIT, although individuals with low IAT scores showed facilitation for angry ME faces.

Faces are communicative. When we look at a face, we immediately apprehend relatively stable information such as gender, ethnicity, age and identity, as well as more fleeting information such as emotional expression and gaze. What we see is also, in part, dependent on who we are; our goals, our preferences and our prejudices (e.g. Maner et al, 2005). Hugenberg and Bodenhausen (2003, 2004) demonstrated that individuals' implicitly measured attitudes towards blacks influence their judgment of hostility on black faces. Specifically, they created movies of black and white faces where the expression moved from neutral towards hostile or from hostile to neutral and asked participants to judge when the expression changed. Those with negative attitudes towards black tended to be more sensitive to hostility shown on the black faces than on the white faces. Likewise, when participants were asked to classify faces of ambiguous ethnicity, individuals with negative attitudes towards black tended to classify the angry faces as black more often. Unpublished work performed in our laboratory has demonstrated that the degree of hostility participants attribute to both angry and neutral Middle-Eastern looking male faces co-varies with their relative negative attitude towards Middle-Easterners.

The question that drives the present inquiry is whether the influence of race and prejudice can be detected in the processing stream earlier than at the judgment stage. Specifically, if we ask participants to perform a relatively simple classification task, such as indicating whether the expression on a presented face is happy or angry, can they ignore irrelevant ethnic information? Furthermore, does the inability to ignore the irrelevant dimension vary with their implicit attitudes towards that ethnicity? In addition, perhaps perceivers are also sensitive to the congruence between the expression, ethnicity and their own attitudes, in a Stroop-like manner. That is, seeing an individual with an expression that conforms to ones stereotype of that group (e.g. angry expressions on individuals from feared out groups or happy expressions from the in-group) will facilitate processing, whereas incongruent expression (e.g., a smiling member of a feared out group) will slow processing down.

In addition, is this effect symmetric or asymmetric? Can individuals ignore emotional information, when classifying faces according to ethnicity? Earlier work has demonstrated that relatively more permanent information, such as sex, interferes with more fleeting information, such as emotion, but the reverse is not the case (Atkinson, Tipples, Burt & Young, 2005).

We assessed this using the classic Garner Interference Task (GIT, Garner, 1976). Because we are in Sweden where the current ethnicity judged to be threatening is Muslim/Middle Eastern, we selected as the out group ethnicity male faces that appear to be Middle Eastern (ME). These were contrasted with Scandinavian(S) looking male faces. All faces expressed either anger or happiness. Participants attitude towards Middle Easterners relative to Scandinavians were assessed using a version of the Implicit Association Task (IAT, e.g. Greenwald, Nosek & Banaji, 2003).

Our prediction is that the Emotion GIT will demonstrate interference from irrelevant ethnicity, that it will vary according to participants' attitudes towards ME men and S Men, and that the pattern of interference will also vary in a Stroop-like manner. For the Ethnicity GIT, emotion should not interfere with the classification, and we predict no effect of implicit attitude.

Method

Participants. Fifty one participants (29 female) completed Experiment 1A. Fifty participants (27 females) completed Experiment 1B. Forty six participants in experiment 1A and 45 participants in experiment 1B considered themselves Swedish. Participants were recruited either from undergraduate classes at Lund University and Malmö College, through Facebook recruitment or private mailing lists. In exchange for their participation, individuals were entered into a lottery for a camera.

Materials. The face stimuli in the two garner tasks consisted of 12 digitized black and white photographs of male faces expressing either anger or happiness. Six of the faces (3 happy) appeared Middle-Eastern, whereas the other 6 appeared Scandinavian, according to a pilot study. The ME males were taken from the AR Face Database (Martinez & Benavente, 1998) whereas the S males were taken from the Karolinska Directed Emotional Faces database (Lundqvist, Flykt & Öhman, 1998). Implicit attitudes were measured with a Muslim-Swedish IAT. The stimuli consisted of 20 Male names, half Muslim sounding, half Swedish sounding (e.g. Amir and Erik), and 20 positive or negative adjectives (e.g. love, war). Included were also two measures assessing explicit attitudes (the feeling thermometer), and Motivation to control prejudice (Dunton & Fazio, 1997). These will not be further described, as they do not figure in the present analysis. All stimuli were presented on a computer; using DMDX software (Forster & Forster, 2003).

Procedure. To conceal the purpose of the experiment participants were told they were to take part in two short experiments. The first of these were the GIT and a filler task. The second ostensible experiment consisted of the IAT, two questionnaires a demographic inventory and a probe for suspicion.

Each trial in the GIT began with a 1000 ms display of a fixation cross, followed by an 80 ms display of the stimulus face. The face was replaced by a blank screen that remained until response or 2500 ms if there was no response. The inter-trial interval was 500 ms.

To respond, participant pressed either the left or the right mouse-button, under speed-accuracy instruction. Participants first completed two practice blocks of 22 trials each, followed by the main experiment, which consisted of four 24 trial blocks. Two of these were baseline blocks where the irrelevant dimension was held constant, whereas the other two were mixed blocks. The order of the blocks was presented according to a latin-square procedure.

The subsequent filler task consisted of an initial probe of suspicion, and a short handedness questionnaire.

Participants were then given the instructions about the IAT. The IAT was constructed according to specifications in (Greenwald, Nosek & Banaji, 2003). When the IAT was completed, participants performed the thermometer task followed by the motivation to control prejudice task. Both were presented on the computer.

Finally, participants completed a paper and pencil form asking about relevant demographic information, and probing again for suspicion. Participants were then debriefed, thanked and dismissed.

Results

Prior to analysis, the GIT responses were averaged for each type of block (baseline-mixed), expression and ethnicity. For the IAT, a d-statistic was calculated for each participant following the procedure described in Greenwald, Nosek & Banaji, 2003. Low scores indicate a relatively more positive attitude towards Middle Easterners, whereas high scores indicate a relatively more positive attitude towards Scandinavians. The scores were divided into two groups using a median split. These will be referred to as low IAT (ME preference) and high IAT (S preference).

The two Garner experiments were each analyzed with a 2 (block) x 2 (ethnicity) x 2 (expression) x 2 (median split IAT) repeated measures ANOVA. Mean reaction times for the emotion and ethnicity GIT are shown in Figures 1 and 2 respectively , whereas difference scores are shown in Figures 3 and 4. The results are presented in parallel.

As expected, there was a main effect of block for the *Emotion* task. Participants were faster classifying the expressions on the blocks where ethnicity was held constant (M = 577.81) than where ethnicity was mixed (M = 600.26, F(1,49) = 7.11, p = .010). There were no main effect of block for the ethnicity sorting task (Baseline: M = 579.10, Mixed: M = 570.3). This is clearly evident in figures 3 and 4 that show the difference scores between the blocks.

Figure 1:Mean reaction times, emotion GIT.

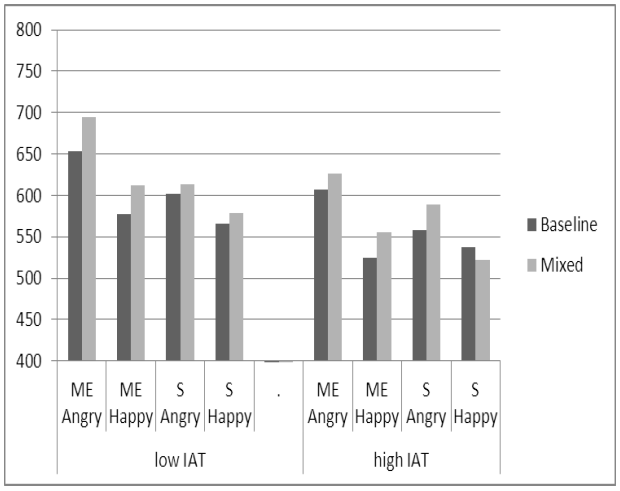


Figure 2: Mean reaction times, ethnicity GIT.

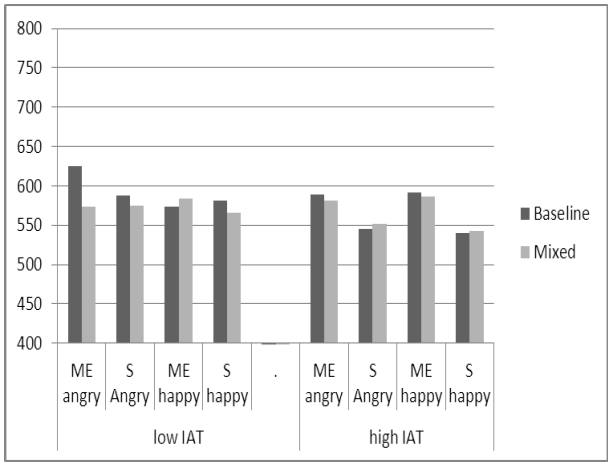


Figure 3: Difference scores, emotion GIT.

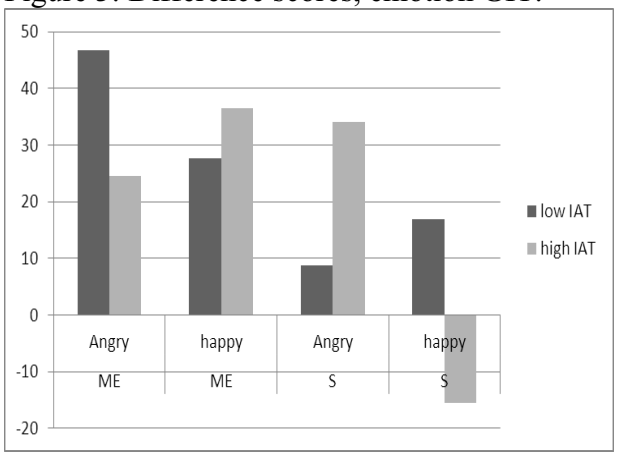
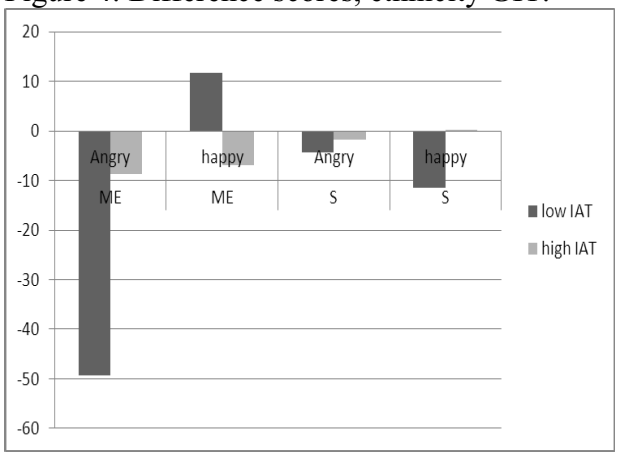


Figure 4: Difference scores, ethnicity GIT.



Participants in both versions tended to respond faster to the S faces than the ME faces. *Emotion* task: ME M = 607.46, S M = 570.61, F (1,49) = 50,17, p < .001. *Ethnicity* task: ME M = 588.06, S M = 561.34, F(1,48) = 18.47, p < .001. The effect is evident in figures 1 and 2, but it is also clear that this result is moderated by higher order interactions.

The *Emotion* task also showed a main effect of expression, where angry faces, M = 619.76, were responded to slower than aappy faces, M = 558.32, F(1,49) = 69.27, p < .001. In addition, there was an interaction between emotion and ethnicity, F(1,49) = 14.48, p < .001. Inspecting the means in figure 1, it is clear that in all pairings, participants respond faster to the happy expressions – which is a standard happiness advantage finding. The slowest responses were to angry ME faces.

For the *ethnicity* task, ethnicity interacted with IAT (F(1,48) = 6,02, p = .018.) Participants in the High IAT group responded the fastest to the S faces (M = 545.16) whereas their responses to the ME faces (M = 587.11) is very similar to the low IAT groups responses to both the ME faces (M = 589.01) and the S faces (M = 577.54). This is clearly evident in Figure 2. Mean responsetime to the S faces in the high IAT group is overall faster than all other responses, regardless of expression.

Both the *Emotion* task and the *Ethnicity* task revealed near significant 4-way interactions: Emotion: F(1,49) = 3.25, p = .0078. Ethnicity: F(1,48) = 3.76, p = .058. For the *Emotion* task, the nature of the near interaction is most clearly seen in Figure 3. The degree of interference is modified by emotion, ethnicity, and implicit prejudice. In addition, the predicted Stroop-like effect is present, although not strongly so. For those with low IAT scores, interference is greatest for ME angry faces (incongruent) and fastest for the angry S faces (presumably congruent). For the high IAT individuals, there is a facilitation for the happy S faces. In addition, the interference for the Angry ME faces is lower than for the two "incongruent" combinations.

The *Ethnicity* task shows no interference from emotion, as predicted. Inspecting Figure 2 it is clear that the interaction is in part driven by the high IAT groups faster responses to the S-faces and, in part, by the low IAT group's slow responses to the Angry ME faces in the baseline condition – a condition where all faces are showing the same expression.

Discussion.

Earlier research has shown that participants' implicit ethnic attitudes or prejudices biases their judgment of both hostile expressions and ethnicity (e.g. Hugenberg & Bodenhausen, 2003, 2004). The question explored here is whether this is because ethnicity is information that cannot be ignored, even when irrelevant. This could either be because

ethnicity is more motivationally salient than emotion (Graham & LaBar, 2007), or because ethnicity is a more permanent feature of a face than emotion (Atkinson et al, 2005). In the present work, participants were indeed unable to ignore irrelevant ethnic information when classifying faces according to emotion, whereas the irrelevant emotions did not significantly interfere with classifying faces according to ethnicity.

When classifying expressions on faces, mixing the ethnicity of the stimulus faces slowed down responses for just about all participants. The degree of interference was also influenced by both the expression on the faces and the implicitly measured attitudes of the participants. Specifically, the degree of interference depended on the congruence between expression and ethnicity *as perceived through the participants attitudinal filter.* For the Low IAT group, the group that showed a relative preference for Middle Easterners, this was manifested in a high interference for the ME angry faces, and possibly the relatively low interference for the Angry S faces. For the high IAT group – those with relatively more preferences for Scandinavians, responses to the two incongruent combinations (happy ME and Angry S) shows the highest degree of interference, whereas displays of the happy S showed a *facilitation.* Speculatively, they may have thought of the happy S faces as a friendly face among a barrage of both hostile faces and faces of strangers. That the stroop-pattern between the low and high IAT group are not symmetric can plausibly be explained by the fact that the participant group was overwhelmingly Swedish. Thus, for all participants the Scandinavian looking faces (and the Scandinavian sounding names) belonged to their in-group (e.g., Maner et al, 2005).

The priority of ethnicity was established in the symmetric GIT experiment. Participants were capable of ignoring the irrelevant emotion dimension when sorting the stimuli according to ethnicity. Participants' implicit attitudes did, however, influence processing in that those in the high IAT group responded faster to the S faces. In other words, participants who felt relatively more favorably towards the Scandinavian group – their in-group – tended to respond faster to the Scandinavian faces. Emotional expression did influence processing however, but only for the low IAT group. This group showed a facilitation for processing the angry ME faces in the mixed expression presentation over the baseline presentation. In fact, as is evident in figure 2, this group responded exceptionally slow to the ME angry faces in the base-line block. This could speculatively be due to the fact that all the stimuli in the baseline blocks expressed the same emotion – in this particular block anger. The particular mechanism for this unexpected result remains to be explored.

Ethnic information has a processing advantage over emotional expression. Whether this advantage is because it is motivationally more salient or because it is more permanent remains to be shown. What is clear is that, at least for the present participant group, ethnicity is difficult to ignore, regardless of implicit attitude. The salience of ethnicity was evident from the responses on our probes for suspicion. Despite a great deal of effort to disguise the purpose of the experiments, about half of all participants guessed the hypothesis at least partially. In addition, this was reflected in the two explicit instruments that have not been reported here: Those that guessed the hypothesis indicated more warmth towards the target ethnicities, and reported higher motivation to control prejudice. Both those measures were uncorrelated with IAT, and complexly related to the GIT results. Future work must look at whether similar results are found for other populations, for other target ethnicities and for other target emotions.

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