**Design**

This experiment used a 2 (identity; Sussex vs student) x 2 (noise; Sussex vs Brighton) between subjects design. The independent variables are the identity of the noise source; Brighton or Sussex students and the participant’s identity with multiple levels; subordinate (‘Sussex University student’), superordinate (‘student’). The dependent variables are participant’s aggression ratings (implicit and explicit), as well as their reported fear levels.

**Participants**

A total of 60 Undergraduate students from the University of Sussex (32 male, 28 female), age between 18 and 24 (M = 20.7, SD = 1.2) participated in this research. Subjects were recruited and approached through various Facebook pages used by Sussex University students, as well as in person on Sussex University campus. Subjects were randomly allocated to each condition using a random number generator. Participants were not paid for their time although they were entered into a £25 prize draw as a form of encouragement to participate.

**Materials**

The aggressive noise stimulus was made using Logic Pro X software.  The 2 minute 20 second audio clip was a comprised of a series of crowd riot sounds from London student protest 2010, as well as various riot/crowd sound effects, to produce an overall aggressive experience. In order to test the assumption that the noise source would be perceived as ‘aggressive’, a pilot study was run on fourteen participants who rated it an 8/10 in terms of aggression. The audio clip can be sourced using the link below:

<https://www.youtube.com/watch?v=VKrVhUGJ7hk>

**Measures**

Implicit Aggression

Each participant's implicit aggression scores were recorded using an Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) on Inquisit Millisecond software. The IAT is a well-established test designed used to assess participant’s automatic attitudes/cognitions (De Houwer, 2006). The IAT is a computerised sorting task, which indirectly measures the strength of associations between two contradictory and often conflicting categories.  In this experiment the target categories were ‘me’ versus ‘other’ and the two attribute categories were ‘peaceful’ versus ‘aggressive’. Participants are first randomly exposed to self-related words (e.g. I, me) or words related to others (e.g. them, others). Next they are introduced to stimulus items referring to either aggressive (e.g. attack, hostile) or peaceful behaviour (e.g. kind, gentle). Participants are then asked to categorise these words into one of the four superordinate categories, using the ‘E’ and ‘I’ keys (Appendix F). By comparing the speed of categorising members of the superordinate categories (me/them) into the two different sorting conditions (aggressive/peaceful), association strengths can be measured. Therefore, it is assumed that the stronger an association, the quicker participant’s reactions times will be, since classification should be simpler. The IAT then calculates the difference in average response times between the classification tasks (Richetin & Richardson, 2008) e.g. self–aggressive and others–aggressive versus self–peaceful and others–peaceful. Participant scores will range between -2 and +2, where a positive score indicates a peaceful self-concept and a negative score indicates an aggressive self-concept (Greenwald & Farnham, 2000). The link to access this measure is as follows:

www.millisecond.com/download/library/IAT/AggressionIAT/.

Explicit Aggression

This section of the questionnaire was presented as a ‘cognitive style test’ to reduce social desirability biases.  Participants’ explicit aggression scores were measured using ‘The State, Scenario Aggression Measure’ (SSAM; Farrar & Krcmar, 2006), which is an adapted version of the well-established Aggression Questionnaire (Buss & Perry, 1992) used to measured trait aggression. The SSAM aims to test state (versus trait) measures to try and predict intended behaviour, allowing greater ecological validity. Participants were given an aggressive scenario to picture themselves in and their responses were measured using 11 items from the SSAM scale (see Table 1, below). The scenario was adapted from the original paper to a situation to become relevant to both identity levels.

Self-relevance

One item was used to measure participant’s self-relevance to the identity of the noise. This was “The people in the soundtrack were relevant to me”.

Fear

The fear measure was constructed using participants mean scores across four items measuring emotions relevant to ‘fear’: “You will now listen to an audio clip of the Sussex/ Brighton students at a demonstration. The audio track made me feel; (i) scared, (ii) nervous, (iii) anxious and (iv) concerned”. The emotion items were not extracted from an established scale and were selected by the researchers for the purpose of this study. A reliability analysis revealed a high level of reliability across all items (α = .83).

Questionnaire

The self-report questionnaire was created using Bristol Online Surveys. The questions used a 7-point Likert scale on all items; ranging from 1 (strongly disagree) to 7 (strongly agree).

Manipulation Checks

A manipulation check was used to test whether participants correctly understood which condition they were in. They were asked to select at the end of the questionnaire “which seems appropriate to how you were treated during this study?” The two item measures were “Sussex student compared to Brighton student” and “student compared to non-student”.

Furthermore, since the experiment is investigating the effects of participant’s social identity on influence of aggression, items were extracted from a previously established collective self-esteem scale (CSE; Luhtanen & Crocker, 1992) as an indirect measure of identification strength. The four items addressed participant’s ‘membership esteem’ and were adapted to become Sussex student or student identity relevant. The items were as follows; “I feel I am a worthy member of my university”, “I feel I don't have much to offer to others students”, “I am a cooperative member at my university” and “I often feel I don't contribute much to my university”. Reliability analysis revealed a moderate reliability across all four items (α = .66), however, since they were extracted from an established CSE scale the measure were obtained during analysis.

Procedure

Participants were randomly allocated to one of four conditions, 15 in each, using a random number generator programme. Participants were presented with a consent form and information sheet (Info\_consent\_aggresson3: Appendices A-D) to read and sign and were told that they were being invited to take part in a study investigating differences in ‘Perception and detection of crowd noise in relation to cognitive style’. They were informed that previous research has demonstrated group differences in people’s ability to detect, perceive and recall crowd noises, in relation to their cognitive style. Such steps were carried out to ensure that participants remained naive to the true purpose of the study during conduction.

The aggressive crowd noise was portrayed either as the Brighton or Sussex University students at a national student demonstration.  The audio soundtrack was identical across all conditions with only the identity of the noise being manipulated. Furthermore, the way in which the participants were treated and referred to on their information sheet differed (Info\_consent\_aggresson3: Appendices A-D). The ‘superordinate’ identity manipulation (i.e. student) positions both Brighton and Sussex students in the soundtrack as ingroup to the participants, whereas the ‘subordinate’ identity manipulation (i.e. Sussex student) positions the Brighton students as outgroup and Sussex as the ingroup. Consequently, there were 3 ingroup conditions and 1 outgroup condition.

At the beginning of the questionnaire, to increase salience of participant’s membership to their social group, they were asked to ‘write down three facts that are important to them as a Sussex student/student’. Participants then proceeded to fill out the initial section of the questionnaire regarding their collective self-esteem, in relation to membership of their social group.

Following this, participants were instructed to put on headphones and listen to the soundtrack. They were once again informed whether it was Brighton or Sussex students in the soundtrack (dependant on condition) to reinforce salience of group memberships.  They were notified that the sound would be relatively loud for experimental purposes but were given full control to remove headphones at any point if they felt uncomfortable.  Furthermore, they were instructed to close their eyes to prevent distraction. At the end of the sound clip participants then continued on the second section of the questionnaire involving questions to do with the emotions the soundtrack induced, the self-relevance measure and the aggressive scenario measure (disguised as a ‘cognitive style test’). Amongst this section were filler to disguise the true purpose of the experiment e.g. “I would be able to reproduce the sounds I have just heard”

In the final section participants were asked to complete the IAT which was presented as a ‘reaction time test’.  They were told to not worry if they got something wrong and to try and complete it as quickly as possible. After their scores was recorded, they finished the remaining section of the questionnaire regarding demographics and the final manipulation check. Lastly, participants were debriefed (Questionnaire\_ethics\_aggresson3: Appendix G). The study took, on average, around 15 minutes per participant.

**Results**

HEADLINES: There was a significant interaction between identity salience and crowd source noise on implicit aggression (IAT scores lower [i.e. aggression higher] in Student-Sussex condition as predicted, and Sussex-Brighton condition which was not). Pride when hearing the aggressive crowd noise was significantly greater for the IG than OG conditions. Explicit and implicit aggression do correlate with each other.

*Main effects of conditions*

* Controlling for gender, there were no significant main effects of identity salience (student or Sussex student) or crowd source noise (Sussex or Brighton) on self-relevance, explicit aggression or implicit aggression.
* There was a significant interaction between identity salience and crowd source noise on implicit aggression (IAT scores lower, i.e., aggression higher, in Student-Sussex condition is predicted, and Sussex-Brighton condition which is not.)
* There were no significant differences on self-relevance or explicit/implicit aggression if the 3 IG conditions are collapsed and the analysis compares IG/OG, but pride when hearing the crowd noise was significant greater for the IG conditions than OG.
* There was no sig difference for self-reported hostility due to hearing crowd noise (IG/OG) (means in unexpected direction)
* Explicit and implicit aggression significantly negatively correlated with each other (as expected).

*Self-relevance as predictor of aggression*

* Self-relevance does not predict explicit or implicit aggression (controlling for gender)

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