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The notion that crime and violence are associated with lower rather than upper social classes has been around and investigated for decades. In an effort to understand the causes of violence among lower social classes, researchers have proposed that the problem has its roots in the way lower class individuals express anger and frustration stemming from the deprivation of resources (e. g., Blau and Blau, 1982; Brownfield, 1986; Parker, 1989; Park et al., 2013). Although such research has largely established that anger is expressed in the form of violent behavior within lower class individuals, the possible differences in biological and neural mechanisms of anger across social class have never been empirically tested.

The objective of the present article is to investigate the role that social class plays in shaping and modifying neural responses to anger. Social Class, Violence & Anger Expression

The original research concerning the relationship between lower social class and violence postulates that variations in rates of urban criminal violence largely results from differences in racial inequality in socioeconomic conditions (Blau and Blau, 1982). The evidence provided for this hypothesis comes from identifying that socioeconomic inequality between races, as well as economic inequality generally, historically correlates with increased rates of criminal violence in 125 of the largest American metropolitan areas. In efforts to define the causal relationship between lower social classes and violence, research has suggested that the frustrations and anger associated with unemployment and being on welfare are aggravated by the lack of fundamental necessities such as food, clothing and shelter among some of the disreputable poor (Brownfield, 1986). Data supporting this deprivation hypothesis reveals that

measures of disreputable poverty, such as unemployment and welfare status, are the strongest correlates of violent behavior. Rather than using violence as a proxy for anger expression, more recent work has directly tested expression of anger with the 8-item anger-out subscale of the Anger Expression Inventory (Spielberger, 1996). Americans with lower social status were found to express more anger through verbally or physically aggressive behaviors, with the relationship mediated by the extent of frustration stemming from life adversities and blocked goals (Park et al, 2013).

Thus, these findings can also be explained by an anger-inducing environment of deprivation. Class Culture and the Brain In unfolding why social class may be associated with different neural responses to anger, a second literature suggests that neural circuitry is modified through sustained engagement in cultural practices. According to the neuro-culture interaction model (Kitayama & Uskul, 2011), repeated participation in a set of cultural tasks results in the corresponding patterns of brain activations and the corresponding psychological tendencies. Any given culture offers a number of practices and as each individual gradually forms their own self-identity, they choose the practices that best suit their developing identity and perform them repeatedly and earnestly to become a respectable member of the culture. Based on the time-honored idea of culture as a collective process composed of shared values and associated behavioral patterns, social classes have been argued to foster their own corresponding class cultures (Stephens, Markus & Phillips, 2014).

Social class divides not only shape the nature and content of people's everyday lives but also inform the types of experiences to which people have

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access, as well as the selves and patterns of behavior that people have an opportunity to develop. The conditions of different social class contexts give rise to culture-specific selves and corresponding patterns of behavior. For example, middle-class contexts provide abundant resources with low material constraint and greater opportunities for choice, influence and control. On the other hand, working-class contexts are characterized by limited resources with high material constraint and few opportunities for choice, control and influence. Consequently, lower class contexts are defined by chaos, uncertainty, and risk. The ability to cope effectively with these conditions undoubtedly requires a different set of behaviors, such as the explicit expression of anger through aggressive verbal or motor behavior. As a result of repeated and sustained engagement in class cultural patterns of behavior, relevant brain pathways are likely to change.

Neurons that are frequently fired together during distinct behavioral patterns, eventually get wired together. This Hebbian principle of long-term potentiation (Anderson, 2010) provides a simple yet believable mechanism by which behavioral patterns, as defined by class culture, plastically shape the actor's brain. What results are culturally induced activation patterns of the brain that guide behavior. Neural Components of Anger The literature on the neural components of anger offers insight into the relationship between individual differences and neural responses to anger.

Electroencephalography (EEG) research in the literature shows that relative left frontal cortical activity is associated with approach motivation independent of positive affect (Harmon-Jones & Gable, 2017). Additional analyses that include individual differences have shown that trait anger, as

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well as self-reported anger and behavioral aggression, are also positively correlated with relative left frontal activity (Harmon-Jones, 2004; Harmon-Jones & Sigelman, 2001). Past theory and research suggest that individuals have low motivational intensity when they believe that it is impossible to act or when they expect to have low coping potential (Brehm, 1999; Brehm & Self, 1989).

For example, trait anger-out, which taps approach-motivated anger, correlates with greater relative left frontal activity, whereas trait anger-control correlates with greater relative right frontal activity, because individuals who score high in anger-control also score high in withdrawal motivation (Hewig, Hagemann, Seifert, Naumann & Bartussek, 2004).

Therefore, anger may sometimes be associated with withdrawal motivational tendencies, however the evidence collected thus far is limited. Nonetheless, theoretical speculations of previous research propose that anger may be most likely associated with withdrawal motivation when the situation evokes the feeling of anger along with pressure to act in accord with norms and concerns about being socially punished (Harmon-Jones & Gable, 2017). The Present StudyThe present research was designed to assess whether neural responses to anger differ across social class. On the basis of past research, it was predicted that lower class individuals would respond to anger induction with greater relative left-prefrontal activity than upper class individuals, because lower class culture promotes a tendency to express approach-motivated anger through aggressive verbal or motor behavior as a response to coping with the deprivation of resources. Conversely, upper class individuals were expected to show greater relative right-prefrontal activity

than lower class individuals, because the expression of approach-motivated anger through aggressive verbal or motor behavior does not typically fit within upper class social norms. To test these hypotheses, an experiment was designed in which the EEG activity of the participant was recorded while they were exposed to affective pictures that have been found to evoke neutral, fearful/disgusting, positive, or angry affective reactions (Harmon-Jones, Lueck, Fearn & Harmon-Jones, 2006). The current participants were given no explicit opportunities for approach-related behavior, but research shows that explicit manipulations of action possibility are not always necessary to evoke approach-oriented anger (Harmon-Jones, 2007).

Lastly, trait measures of anger, as well as objective and subjective measures of social status were collected. **Method**
Participants The sample of the present study was drawn from the student population of the University of Edinburgh. Only right-handed individuals were invited to participate, because research suggests that left-handed people may differ in hemispheric specialisation of emotion (Heller & Levy, 1981). All participants were recruited via the local university's online experiment volunteer management system and received partial course credit in exchange for participation. A total of 67 participants were scheduled for data acquisition. The data sets of 3 participants could not be completed and were excluded from the sample.

The remaining 64 participants defined the sample of the present study, which consisted of 23 men (mean age 19.4 years, SD 2.8, range 18-21) and 41 women (mean age 20.1 years, SD 2.1, range 18-22). **Procedure** After arriving at the laboratory, participants were informed that the purpose of the experiment was to investigate brain waves in response to visual stimuli. The <https://assignbuster.com/the-original-research-concerning-the-relationship-between-lower/>

participants gave written consent after being briefed about the procedure and were informed that they could leave the experiment at any time.

At the beginning of the session, a stretch-lycra electrode cap was applied to the participant. The participant was seated in an electrically shielded, dimly lit EEG cabin, and electrodes were applied for the measurement of electrooculogram (EOG) and EEG. The respective signals were recorded during eight resting baseline periods that lasted 1-minute each. Participants were asked to relax with their eyes open (O) or closed in one of two alternating orders (OCCO-COOC or COOC-OCCO) during the 1-minute intervals (as in Harmon-Jones, 2007). Participants were also asked to keep their head and body as still as possible during recording and were given verbal instructions by the experimenter via the intercom. After the baseline EEG recording, participants viewed a series of pictures while EEG was recorded. To record EEG, six electrodes mounted in a stretch-lycra electrode cap were placed on the participant's head using known anatomical landmarks (Blom & Anneveldt, 1982).

EEG was recorded from mid-frontal, lateral frontal and parietal regions of the brain, using the 10-20 international system (Jasper, 1958). A ground electrode was mounted in the cap on the midline between the frontal pole and the frontal site. Two reference electrodes were also placed on either ear lobe.

A bipolar vertical EOG was recorded from supra- and infraorbital positions of the right eye to facilitate artifact scoring of the EEG. Electrode gel was used as the conducting medium and all electrode impedances were under 5, 000

ohms, while homologous sites were within 1, 000 ohms of each other to ensure comfort and well-being of the participant. Four sets of pictures, that elicited different emotions, were presented in randomized order with 16 pictures in each set (as in Harmon-Jones, 2007).

Three of the sets were selected, because they had been found to evoke negative (fear or disgust; e. g., bloody accident victims), positive (e. g., attractive couples) or neutral affect (e. g., neutral facial expressions) in past studies. The fourth set of pictures were selected from the internet, because they were known to evoke anger in individuals who were opposed to racism and prejudice (Harmon-Jones, Lueck, Fearn & Harmon-Jones, 2006). These pictures depicted instances of racism and prejudice (e. g., Ku Klux Klan, Hitler, Neo-Nazis).

Each picture trial started with a fixation cross presented for 1-second on a computer screen followed by a picture presented for 6-seconds. After viewing all sets of pictures, participants viewed each of them a second time in the same manner. After the recordings were taken, participants completed a packet of questionnaires that included a resource-based index of class using income, the MacArthur Scale of Subjective Social Status and (Adler et al., 2000) and the State-Trait Anger Expression Questionnaire (STAXI; Spielberger, 1988).

After participants completed these questionnaires, they were told of the purpose of the study. Measures Objective Social Status — Participants were asked to report the educational attainment of both their parents: (1) did not finish high school, (2) high school graduate or some college, (3) college

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graduate, or (4) postgraduate degree. Mothers' and fathers' educational attainment was then standardized, summed, and averaged to create an overall measure (as in Piff, 2014). Participants also reported their parents' combined current annual salary and total annual household income using six categories: below \$15, 000, between \$15, 001 and \$25, 000, between \$25, 001 and \$35, 000, between \$45, 001 and \$55, 000, and above \$55, 001. Annual salary and household income were standardized and averaged to compute an overall measure of social class (as in Piff, 2014). Subjective Social Status — Participants also completed the MacArthur Scale of Subjective SES to index social class (Adler, Epel, Castellazzo & Ickovics, 2000). Respondents were presented with a picture of a ladder, which had 10 rungs with different levels of income, education, and occupational prestige. Participants were asked to select a rung to represent where they feel they stand relative to others. Anger Expression — Anger expression was assessed with the 8-item anger-out subscale of the Anger Expression Inventory (Spielberger, 1996). Trait anger-out taps approach-motivated anger, as it is characterized by the expression of angry feelings through aggressive verbal or motor behavior directed toward other people or objects in the environment. Respondents rated how often (1 = almost never, 4 = almost always) they expressed angry feelings through verbally or physically aggressive behaviors when they felt furious and angry (e. g., “ I slam doors”, “ I say nasty things”).