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Stigma: A Sociological and Neuroscientific Review

Helen Wohoyie[1], Alexios Kouzalis[2]

[1,2] HSE University, Moscow, Russian Federation

ABSTRACT: The term "stigma" was first used by the Greeks to describe physical sins intended to highlight something peculiar and negative about the signifier's moral standing (Goffman, 1963). The signs, which were burned or sliced into the body, declared that the bearer was a traitor, a slave, or a criminal (in general a tarnished individual who should be avoided, particularly in public areas; Goffman, 1963) Stigma is a tool used by those who want to hold other people down, in order to achieve their goals and specifically in situations in which stigma processes serve the goals of stigmatisers with regard to the exploitation, domination, or exclusion of others (Link & Phelan, 2014). Over the past 20 years, there has been a significant increase in social science study on stigma, especially in social psychology, where scholars have clarified how people create cognitive categories and connect those categories to stereotyped views (Link & Phelan, 2001). In this multidisciplinary study we review stigma from a sociological standpoint by dwelling into the negative impact of stigma on society as well as from a neuroscientific standpoint by investigating the neural correlates of stigma.

Corresponding Author:
Alexios Kouzalis

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THE NEGATIVE IMPACT OF STIGMA ON SOCIETY

Sociological perspectives encourage us to consider stigma as a multifaceted social process (Yang et al., 2007). It is observed that social actors' interpretive interactions, which encompass cultural meanings and ideal types, incorporate stigma and because others react to a stigmatized person as someone who is already burdened with shame, a social dialectic of interpretation and reaction successfully ensures that marginalization is reinforced (Yang et al., 2007). Macro-social structural forces also exacerbate marginalization by precluding alternative forms of responses or interactions and the social aspects of stigma are also highlighted by anthropological or ethnographic perspectives, however these perspectives force us to think more carefully and comprehensively about how stigma is ingrained in the moral lives of those who experience it (Yang et al., 2007).

By definition, stigma is the labeling of people whose physical, mental, or social traits do not conform to the observer's subjectively constructed and calibrated sense of norms; over time, this labeling may find its way into laws, rules, and other legal documents (structural stigma; Almeida & Sousa, 2022). When someone has internalized stigma, it affects their feelings and behavior (Almeida & Sousa, 2022). Stereotyping and devaluation give rise to public stigma, which in turn causes social exclusion, discrimination, and flagrant violations of human rights (Almeida & Sousa, 2022). Through methods of discrimination, expectation confirmation, and automatic stereotype activation, stigma directly affects the stigmatized and indirectly impacts them through challenges to their social and personal identities (Major & O'Brien, 2005). According to the identity threat model of stigma, assessments of the importance of stigma-relevant circumstances for wellbeing are influenced by situational signals, societal representations of an individual's stigma status, and individual beliefs and motivations (Major & O'Brien, 2005). Identity danger develops when stigma-relevant stressors are judged as potentially detrimental to one's social identity and as beyond one's coping resources (Major & O'Brien, 2005). Identity threat incites attempts at threat reduction through coping mechanisms and triggers involuntary stress reactions which have an impact on significant results including health, academic success, and self-esteem (Major & O'Brien, 2005). Identity threat theories contribute to the understanding of the wide variations in how different individuals, communities, and circumstances react to stigma (Major & O'Brien, 2005).

Stigma and prejudice have long-term impacts that manifest early in life (Grasser & Jovanovic, 2022). Associative fear learning and pattern completion networks have the potential to encode societal stigmas and in a setting of discrimination and stigma, persistent activation of the sympathetic-pituitary-adrenal axis and the hypothalamic-pituitary-adrenal axis can lead to differences in physical health among marginalized and minority populations (Grasser & Jovanovic, 2022). An experiment involving 59 women looked into the theory that people who are stigmatized could defend their sense of self-worth by blaming unfavorable comments on bias (Crocker et al., 1991). It was found that compared to women who received negative feedback from a nonprejudiced evaluator,

those who received unfavorable feedback from a biased evaluator experienced less depressed affect and linked the input to his prejudice (Crocker et al., 1991).

The stigma notion has come under fire for being overly nebulous and singularly focused (Link & Phelan, 2001). While there are a number of psychological theories that suggest people in marginalized groups should have poor self-esteem overall, most empirical data refutes these notions (Crocker & Major, 1989). According to accepted social psychology theory, those who experience social stigma have low self-esteem however this claim's empirical support is contradictory (Crocker & Quinn, 2000). This inconsistency has been linked to a major issue with literature's conception of self-esteem, where it is viewed as a stable attribute that is constant in a variety of social contexts (Crocker & Quinn, 2000).

A different perspective on self-esteem has been proposed, according to which an individual's self-esteem is created in the moment, within the context, based on the meanings they bring to the circumstance (Crocker & Quinn, 2000). This disparity could also be explained by taking into account the ways in which a person's self-concept may be shielded by belonging to a stigmatized group (Crocker & Major, 1989). Members of marginalized groups could interpret unfavorable comments as bias directed at their group, compare their performance to that of the ingroup rather than the comparatively advantaged outgroup, and selectively downplay the aspects in which their group performs poorly and emphasize the ones in which they do well (Crocker & Major, 1989).

NEURAL CORRELATES OF STIGMA

Recent years have seen a rise in the public's interest in neuroscience, raising concerns about how the general public reacts to concepts from the field (O'Connor & Joffe, 2013). The impact of neuroscience on society is frequently discussed in terms of its revolutionary potential to radically challenge long-held notions of personhood (O'Connor & Joffe, 2013). The goal of the emerging multidisciplinary area of social neuroscience is to comprehend how social processes and behavior are implemented by biological systems (Cacioppo et al., 2007). In social neuroscience, ideas of social behavior are informed and refined by biological concepts and techniques, and theories of neural organization and function are informed and refined by social and behavioral notions and data. (Cacioppo et al., 2007). In recent years, there has been a significant surge in research on social neuroscience and brain imaging studies in healthy children and adults, animal models of social behavior, and studies on the social determinants of peripheral neuronal, neuroendocrine, and immune processes are some of the most active fields of research (Cacioppo et al., 2007).

There are now more options for defining and battling the stigma because to our growing understanding of social cognition at the behavioral and brain circuitry levels Griffith & Kohrt, 2016). Research on social neuroscience has shown how brain circuitry and signaling pathways handle social information in a step-by-step, sequential manner (Griffith & Kohrt, 2016). The anterior cingulate cortex is where social exclusion is processed, according to experimental social neuroscience research (Frischknecht et al., 2013). N-acetylaspartate and discrimination experience were found to be negatively correlated, suggesting that patients with high discrimination experience had diminished anterior cingulate cortex neuron functioning and a correlation was found between anxiety and perceived stigmatization that was mediated by N-acetylaspartate (Frischknecht et al., 2013). The relationship between N-acetylaspartate in the anterior cingulate cortex and discrimination experience suggests that those who report discrimination may have a brain system dysfunction pertaining to cognitive control over emotionally charged social cues (Frischknecht et al., 2013).

Based on social psychology and social neuroscience, stigma evaluation can distinguish between different types of stigma and the most effective ways to combat each type (Griffith & Kohrt, 2016). Empirical validation of efficacious interventions aimed at mitigating bias and stigma has been initiated in social psychology research (Griffith & Kohrt, 2016). The George Washington University (GWU) psychiatry residency school has created an eight-week course on handling stigma. The course makes use of social neuroscience research to show that stigma is a typical brain function that results from human group behavior evolving through evolutionary processes (Griffith & Kohrt, 2016).

The process of categorizing is the most effective way to quickly and effectively perceive people in social interactions, but the results of this process can be harmful, especially when stigma is involved (Krendl et al., 2006). In order to better understand the brain correlates of making implicit and explicit judgments about individuals with known stigmatized conditions as well as healthy controls a study used functional magnetic resonance imaging (Krendl et al., 2006). The amygdala and insula, which have been shown to react to unpleasant and disgusting stimuli, as well as the anterior cingulate and lateral prefrontal cortex, which are highly connected to inhibition and control were among the regions of interest that surfaced (Krendl et al., 2006). Furthermore, in reaction to the most negatively unpleasant stimuli, there were higher variations in activation observed in the implicit condition for both the prefrontal and amygdala cortical regions (Krendl et al., 2006). In particular, cortical responses (such as the lateral prefrontal cortex and anterior cingulate) rose in tandem with subcortical responses (such the amygdala), suggesting the possibility of inhibitory processing (Krendl et al., 2006).

Another study (Krendl et al., 2012) examined whether moderating negative bias to stigmatized individuals has a distinct brain activity profile from general emotion regulation using functional magnetic resonance imaging (fMRI). During fMRI, participants were shown pictures of social targets who were either stigmatized or not, and they were asked to control or sustain their emotional response. They also measured their implicit bias toward these members of the stigmatized group. When establishing a regulatory reaction to stigmatized images as opposed to non-stigmatized images, participants' prefrontal cortex activity was more

pronounced throughout the cortex. Their implicit prejudice showed a favorable correlation with this brain activity. When compared to stigma regulation, general emotion regulation produced a more extensive pattern of brain activity. This activity was mostly posterior, indicating that, in contrast to stigma regulation, general emotion regulation may include greater visuospatial processing. These results imply that negative affect regulation toward stigmatized targets might happen comparatively faster than negative affect regulation toward non-stigmatized targets.

In another study (Decety et al., 2010) participants in an fMRI scanning process saw a sequence of brief video clips showing age-matched people in pain who were either identical to the participant (healthy), stigmatized but not accountable for their stigmatized condition (AIDS-positive due to infected blood transfusion), or stigmatized and accountable for their stigmatized condition (AIDS-positive due to intravenous drug use). In comparison to healthy and AIDS drug targets, the results demonstrated that participants were more sensitive to the pain of AIDS transfusion targets. This was supported by higher ratings of pain and empathy during video evaluation, as well as greater BOLD signal in regions linked to pain processing (i.e., right anterior insula, anterior midcingulate cortex, periaqueductal gray). Furthermore, the degree to which participants held AIDS drug users responsible for their illness affected the behavioral differences between healthy and AIDS drug targets. The more participants blamed these targets, compared to healthy controls, the less pain they attributed to them, even after controlling for both explicit and implicit AIDS prejudice.

CONCLUSION

Stigmatizing behaviors can impact a variety of spheres of an individual's life and significantly impact how opportunities for success are distributed in areas including income, housing, criminal activity, health, and life itself (Link & Phelan, 2001). Labels can readily become ingrained in a person's perception of who they are, and a person's biography may be shaped by internalized stigma, which is a condition brought on by negative labels placed on them (Almeida & Sousa, 2022). Stigma discourages the use of social and health services, and this may ultimately have an impact on the person's physical and mental health (Almeida & Sousa, 2022). Thankfully nowadays, with the aid of technology that the sphere of neuroscience can provide us, we are able to know exactly which areas of the human brain the process of stigmatization is affecting. The future task of social neuroscientists is to help stigmatized individuals by targeting the affected brain regions in an attempt to prevent further damage by protecting the brain from further degradation.

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