CHAPTER

17

The Henchman's Brain: Neuropsychological Implications of Authoritarianism and Prejudice

Kelsey Warner[1,3], *Daniel Tranel*[1,2], *Erik Asp*[3,4]

[1]Department of Neurology, University of Iowa, Iowa City, IA, USA; [2]Department of Psychology, University of Iowa, Iowa City, IA, USA; [3]Department of Psychiatry, University of Iowa, Iowa City, IA, USA; [4]Department of Psychology, Hamline University, St. Paul, MN, USA

OUTLINE

1. INTRODUCTION

> From my childhood, obedience was something I could not get out of my system. When I entered the armed services at the age of 27, I found being obedient not a bit more difficult than it had been during my life to that point. It was unthinkable that I would not follow orders…A life predicated on being obedient and taking orders is a very comfortable life indeed. Living in such a way reduces to a minimum one's own need to think. ***Otto Adolf Eichmann (1962)***[1]

Otto Adolf Eichmann was the ideal subordinate for Adolf Hitler in Nazi Germany. The greatest virtue to Eichmann was to follow orders, regardless of circumstance or personal aversion. This ruthless devotion to authority enabled him to orchestrate the mass deportation of Jews to ghettos and extermination camps during World War II. Nazi Heinrich Müller suggested, "If we had fifty Eichmanns, we would have won the war."[2] Upon reflection of the atrocities of the Holocaust, many have questioned what kind of person could do such inhuman and cruel acts. What factors enable an individual to obey authorities and harm others? Arguably some of the most important, infamous, and controversial studies in the history of psychology attempted to understand how people could commit horrific acts of aggression against others, such as the Holocaust. This chapter will review the classic and contemporary work on authoritarianism and prejudice toward outgroups. We will also bring recent neuropsychological and neuroimaging evidence to bear on the issue, arguing that certain neural regions are critical for resistance to authoritarian persuasion. Our review aims to understand the mind and brain of henchmen like Eichmann, those individuals who easily follow an authority's orders and are intent on harming others.

Eichmann was hanged for his crimes against humanity five days after Stanley Milgram[3] completed his first obedience study.[4] In a seminal and controversial research design, Milgram had an experimenter act as an authority figure to a naïve participant and a confederate. The participant was given the role of a "teacher" and was required to administer ostensibly real electric shocks to

http://dx.doi.org/10.1016/B978-0-12-800935-2.00017-8

the "learner" (the confederate). Each time the learner produced an incorrect response, the teacher needed to administer greater levels of shocks to the learner. After several trials, it became apparent to the participant that the learner was in distress. Appeals to the experimenter were met with a series of prods used to continue the experiment. Remarkably, most of the participants succumbed to the pressure of the experimenter: 62.5% of the subjects delivered the maximum amount of 450 volts (labeled XXX) and 80% gave shocks after the learner screamed, "Let me out of here! My heart's bothering me. Let me out of here!…Get me out of here! I've had enough. I won't be in the experiment anymore."[3] Milgram emphasized the critical role of situational factors in the likelihood to obey directions from an experimenter that ostensibly produced harm toward another human being.[4] Proximity of the victim or the experimenter, institutional context, and the validity of the authority all influenced obedience. For instance, in the "touch-proximity" experiment, the learner was seated directly next to the teacher. At the 150-volt level, the learner demanded to be left free and refused to place his hand on the shock plate. The experimenter then ordered the teacher to force the learner's hand down onto the plate. Milgram's rather banal conclusion was that this condition reduced obedience relative to the original experiment, as only 30% of the subjects delivered the maximum shock amount. However, the most disquieting and unsettling fact from this setup is the simple percentage of subjects that forcibly produced ostensible pain and even death from the authority of the experimenter. Even under no explicit threat from the experimenter, almost one in every three people would continue the experiment when the learner was slumped over and unresponsive. Who are these highly obedient individuals? What are the specific traits or characteristics that overlap between these individuals and real henchmen like Otto Eichmann? Are these individuals, to some degree, modern day henchmen?

2. THE AUTHORITARIAN PROFILE

Although Milgram highlighted some case examples of the individuals in his study, he did not examine potential common traits in those that obey and those that do not. During the same period, several researchers at the University of California–Berkeley published the highly-influential book *The Authoritarian Personality*[5] that attempted to delineate the traits and dispositions of individuals that would submit to and be aggressive for a perceived authority figure. Early work was marred by poor psychometrics (e.g., the F scale)[6] and political controversies (e.g., right-wing authoritarianism versus left-wing authoritarianism); however, research on authoritarianism has matured with highly reliable and valid scales, as well as convincing studies demonstrating that authoritarianism in the general population is relatively nonexistent on the left side of the political spectrum.[7]

More specifically, a sample of over 2500 individuals was surveyed using a reliable left-wing authoritarianism scale that was structurally similar to the right-wing authoritarianism scale. Not a single left-wing authoritarian could be identified in the general population sample.[7] More recent research has suggested that left-wing authoritarianism may exist, but only in a small and specific minority of political activists in extremist parties, such as anarchists.[8] These authors emphasized that they did not expect to (nor did they) find left-wing authoritarians among the population of "ordinary citizens" nor among individuals from mainstream political parties—as is commonly found in right-wing authoritarianism. To be sure, political beliefs that are currently ascribed as left-wing or right-wing have fluctuated under either rubric across time. For example, right-wingers tended to have more egalitarian beliefs in the US in the 1860s, whereas left-wingers tend to have more today. Thus, it is likely that the set of political beliefs currently deemed "right-wing" are not inherently associated with high authoritarianism. As the political beliefs recognized as "right-wing" shift, authoritarians may not shift with them. It is also important to emphasize that while the majority of authoritarians hold conservative political views, there are many individuals who hold right-wing political views that are not authoritarians.[7] That is, while authoritarianism strongly predicts one's political views, conservativism and authoritarianism are independent constructs.

This discussion focuses on the characteristics of authoritarianism that exist across a large spectrum of the population; thus, here we will focus on what has been traditionally termed right-wing authoritarianism. To reiterate, in this chapter, the general term "authoritarianism" will refer to the more generalizable traits present in the broad population of so-called "right-wing authoritarians."

Robert Altemeyer[7] has defined authoritarianism as a covariation of three attitudinal clusters: (1) authoritarian submission, a high degree of submission to perceived authorities in society; (2) authoritarian aggression, a general aggressiveness toward others that is perceived to be sanctioned by authorities; and (3) conventionalism, a high degree of adherence to social conventions that are perceived to be endorsed by authorities. Authoritarianism is an individual difference variable developed on the idea that some people need little situational pressure to submit to authority and attack others, while others need significantly more. Indeed, in a design similar to Milgram's obedience studies, authoritarianism measures strongly predicted which "teachers" would give the highest levels of shocks to "learners" ($r = 0.43$).[6]

Authoritarians also tend to show indifference to government injustices directed against unconventional groups, little interest in protecting human rights, a general punitiveness against persons convicted of crimes, increased sexual aggressiveness, increased acceptance of immoral actions committed by authorities, and increased support for military attack.[7,9,10] Thus, Altemeyer's construct of authoritarianism has high external validity.

Another useful trait of a henchman is negative attitudes toward individuals outside their in-group. Considering the case example of Eichmann and his social attitudes, it may be unsurprising that measures of authoritarianism are highly correlated with prejudice toward outgroups.[7,11–13] Obedience to authority and prejudice against Jews were cornerstones of Nazi indoctrination tactics.[14] However, even outside of these extreme "brainwashing" programs, authoritarianism predicts negative attitudes toward almost every "outgroup": ethnic minorities, homosexual individuals, women, the homeless, criminals, drug dealers, prostitutes, and atheists.[7,15–18] Stemming from Gordon Allport's[19] seminal book, *The Nature of Prejudice*, contemporary theories of social attitudes see prejudice as a tension between an automatic, unintentional stereotyping and a secondary, controlled compensation based on egalitarian beliefs.[20] In this model, if egalitarian beliefs are absent or cognitive control is disrupted, individuals will show increased prejudicial attitudes and behaviors toward outgroups. More education and increased endorsement of egalitarian values is associated with decreased prejudice.[21,22] In addition, poor executive control/inhibitory ability has been associated with increased prejudice and stereotyped judgments.[20,23,24]

Some studies have found specific cognitive functioning differences between authoritarians and nonauthoritarians. However, the correlation between authoritarianism and general intelligence is relatively weak to nonexistent[7,25] (but see Altemeyer's book for a discussion), suggesting that one can be relatively high in IQ and can also be high in authoritarianism. Rather authoritarians display a unique profile of beliefs and cognitive abnormalities that obstructs independent, skeptical thought. First, authoritarianism strongly correlates with religious fundamentalism and general dogmatism.[13,15] They tend to have high religious beliefs that are held with an immutable, unjustified certainty. Of course, this does not mean that authoritarians hold *all* dogmatic beliefs they are exposed to, nor does it imply that nonauthoritarians do not endorse some dogmatisms. Rather, on average, authoritarians generally tend to hold more dogmatic attitudes. This strong correlation suggests that authoritarians rely on authorities to provide their beliefs for them and, importantly, tend to be less likely to counter these beliefs with independent thought.[7] As Eichmann mentioned (introductory quote), he did not need to think for himself, only to believe the statements and follow the orders he was given. Of course, this may not be a cognitive problem, per se, but a motivational one. However, authoritarians also tend to show highly compartmentalized beliefs to antithetical statements in situations without a motivational component.[7] Authoritarians are more likely to agree with both the statements, "If human beings were really honest with each other, there would be a lot more anger and hostility in the world" and "If human beings were really honest with each other, there would be more sympathy and friendship in the world" than nonauthoritarians."[a] Thus, even when contradictory ideas are presented within minutes of each other, authoritarians fail to notice the discrepancy and do not change their beliefs to be consonant with one another. They tend to think with a "forked mind" and are particularly swayed by slogans and propaganda.[7] Finally, authoritarians are particularly poor at recognizing decidedly false inferences.[7,26] The evidence suggests authoritarians have an increased bias toward believing information: when a statement is true, they will tend to think it's true; however, when a statement is false, they will also tend to think it's true.[b]

Not only do authoritarians tend to believe contradictory ideas, but they also endorse contradictory principles. Their judgment justifications tend to ignore alternative viewpoints as they often employ double standards.[7] Authoritarianism negatively correlates with empathy and perspective taking.[27] As a result, authoritarians tend to be egocentric and relatively blind to the concerns and welfare of others. Moreover, individuals high in authoritarianism also tend to carry around less guilt than nonauthoritarians.[7] Altemeyer suggests that their low guilt might be attributable to an increased ease in expunging moral transgressions using religious prayer and confession. However, it is also possible that they simply experience reduced social emotions, such as empathy and guilt, and this leads to their egocentric behavior and callous attitude toward others. Future research should address this important distinction.

Thus far, we have highlighted many attributes of authoritarians: their behavior, social attitudes, cognitive functioning, and even their affect. This particular constellation of psychological tendencies is common among authoritarians from the general population; it is not confined to individuals who display extremist behaviors in response to "brainwashing" efforts (as with

[a] In this study, the antithetical statements were presented on two separate pages in the same research session.

[b] We pick up a discussion of authoritarianism implications for the mechanisms of belief and disbelief below.

Otto Eichmann). Indeed, perhaps the combination of an authoritarian profile (commonly seen in the general population) and focused, consistent persuasion techniques against outgroups result in the atrocious behavior of Nazis like Eichmann. The general population authoritarian profile is most likely derived from several nonpersuasion-based factors: genetics, parental rearing style, experiences with authoritarian punishment, and experiences with outgroups all influence the probability to which one will be high in authoritarianism.[7,28] However, it is also possible neural functioning may be related to authoritarian attitudes and behaviors. Given the unique psychological profile of quotidian authoritarians, the next section investigates whether a particular neural dysfunction could account for many of these psychological tendencies.

3. AUTHORITARIANISM TRAITS IN PATIENTS WITH VENTROMEDIAL PREFRONTAL CORTEX DAMAGE

The prefrontal cortex is often considered the brain region responsible for what makes us "who we are." Since the seminal observations of human lesion patient Phineas Gage, it has been known that damage to the prefrontal cortex can profoundly alter personality.[29] More recent research with patients who have damage to the ventromedial prefrontal cortex (vmPFC) has revealed an interesting profile of cognitive, affective, and behavioral tendencies that are strongly reminiscent of individuals high in authoritarianism. First, it is important to point out what is preserved following damage to the vmPFC. Most patients have normal language abilities, visuospatial function, and reading performance. Performances on general intelligence measures (such as the Wechsler Adult Intelligence Scale) are often in the normal to superior range.[30] However, the patients may have deficits in the so-called executive functions: planning, decision-making, inhibition, and attention.[31–33] Thus, while these patients can have executive function deficits, it is important to note that basic intellectual and cognitive capacities in these patients remain intact.[34] In addition, patients with vmPFC damage have problems properly regulating their emotions. In a particularly compelling bilateral vmPFC case, patient "EVR" revealed a profound inability to express emotion about complex personal and social situations, often leading to disadvantageous real-world social behavior.[30,35] EVR has diminished emotional responsivity, blunted affect, and has particular problems evoking social emotions, such as empathy and guilt.[30,36] He displays restricted emotions (i.e., low emotional expressivity) accompanied by sporadic inappropriate emotional outbursts.[37] Although intelligent and easy to talk to, he cannot hold down a job and has difficulties maintaining relationships. Indeed, EVR and other prefrontal patients often show increased aggression toward others.[38,39]

Patients with vmPFC damage also evince deficits in decision-making and moral reasoning. The emotional deficits present in these patients have an effect on their ability to make normal decisions on the Iowa Gambling Task, a computerized card game that simulates real-life decision-making.[40] This has been associated with a failure to activate somatic signals as indexed by skin conductance response.[36,41] Relative to comparison groups, these patients also show impaired moral reasoning. For example, patients with vmPFC damage judge attempted harm (e.g., attempting, but failing to poison someone) as more morally permissible than *accidentally* harming someone (e.g., accidentally poisoning someone, leading to their death).[42] These results run counter to the findings in healthy age-matched adults and individuals with damage outside the region of the vmPFC. These comparison groups judge attempted harm as *less* morally permissible than accidental harm. In another study, patients with vmPFC damage were more likely than comparison groups to endorse high-conflict personal moral dilemmas, for example, smothering your own baby to save the lives of others. Patients with vmPFC damage showed normal judgments for impersonal moral scenarios, such as putting false information on a resume to look more impressive, as well as for nonmoral scenarios, such as deciding whether to take a bus or train to get to a meeting on time. The authors refer to the distinct endorsement of high-conflict personal scenarios as more utilitarian in that these patients elect to maximize aggregate welfare. Thus, generally patients with damage to the vmPFC region will endorse actions that many consider to be moral violations. Of final note, it has been shown that these patients also tend to be more punitive toward others in an economic game in which they are slighted.[43]

Interestingly, the characteristics of patients with vmPFC damage and healthy individuals high in authoritarianism show considerable overlap. Both have reduced empathy and guilt, increased punitive judgments, increased endorsement of harmful actions, and increased egocentric behavior. Moreover, virtual simulations of Milgram's[3] obedience paradigm have shown vmPFC activations in a functional Magnetic Resonance Imaging (fMRI) study and increased autonomic responses when healthy participants see the virtual "learner" in pain.[44,45] Of course, the characteristics in patients with vmPFC damage are acquired from brain damage, whereas the healthy authoritarians profile is likely derived from genetic factors and early environmental conditions. Could damage to the vmPFC actually produce the authoritarianism personality? Is it possible that a lesion to the vmPFC might create an individual that is geared to submit to authorities and attack others? To answer

these questions, a deeper investigation of the cognitive tendencies in these patients was necessary, along with a neuropsychological model that may account for their pattern of beliefs and behavior.

As mentioned above, healthy individuals high in authoritarianism tend to show an increased belief contradiction. They are less likely to notice and correct two mutually exclusive ideas. Thus, they are less likely to have cognitive dissonance,[46] and they tend to compartmentalize their beliefs. Patients with vmPFC damage also show difficulties integrating mutually exclusive beliefs. They are often prone to pathological confabulation, wherein they truly believe their (sometimes florid) assertions, even though contradictory evidence to these assertions is salient and obvious.[47] Clinical observations have also associated a general credulity with patients with vmPFC damage, which could be due to a deficit in the ability to compare and correct discrepant beliefs.[48] Using this clinical data and the hypothesis of an *acquired* authoritarian personality in these patients, the False Tagging Theory (FTT)—a neuropsychological model of belief and doubt[31]—was developed. This model attempts to unify prefrontal cortex functioning and may offer some interesting insights into healthy individuals high in authoritarianism and prejudicial beliefs.

4. MECHANISMS OF BELIEF AND DOUBT: THE FALSE TAGGING THEORY

The central tenets of the FTT include the following: (1) belief occurs in two stages: (a) mental representation (i.e., the existence of meaningful information in a mental system) and (b) mental assessment (i.e., the acceptance or rejection of such information); (2) all ideas that are represented are believed during the initial representation stage, but a secondary psychological process can produce doubt after assessment; (3) the initially believed representation of the idea must be "tagged" to indicate falsehood, thereby generating doubt; (4) the prefrontal cortex is vital for the "false tag" in the assessment component of belief; and (5) the "false tags" are affective in nature.[30,31,49–51] The FTT's core tenets rest on basic belief principles outlined by Baruch Spinoza. In Spinoza's view, disbelief is merely a deliberate revision of belief; thus, comprehension and initial acceptance are the same process. This can be contrasted with René Descartes' (i.e., the Cartesian) model of belief, which suggests that the comprehension of meaningful information precedes the act of both acceptance and rejection.[49] The FTT employs a Spinozan framework and suggests that mental representations are initially believed, and a secondary, psychological analysis produces disbelief. The FTT argues that the prefrontal cortex is a critical hub in a network of brain regions that mediates this secondary disbelief (or doubt).

Intuitively, the Cartesian model of belief seems to be the more likely process by which we believe information. Introspective experience suggests that we logically weigh positive and negative evidence to believe or disbelieve an idea.[51] However, several convincing psychological experiments have shown support for the Spinozan model. For example, in the Phony Man Experiment, participants were shown smiling faces and were informed either before or after each presentation that the face was expressing either true or false happiness.[52] On some trials, participants' processing of the face was interrupted by having them quickly perform an unrelated tone-discrimination task. Participants were once again presented the original faces and asked to determine whether each was expressing true or false happiness. In regards to the Spinozan and FTT belief and doubt models, interruption should cause participants to mistake false ideas for true ones, but not vice versa. Results indicate that interruption had no effect on the correct identification of true faces, but significantly reduced correct identification of false faces. Thus, participants seem to have initially represented each face as expressing true happiness, and then attempted to alter that representation when the face expressed false happiness. Therefore, this experiment demonstrated a dissociation between belief and disbelief, but no dissociation between comprehension and belief.

More evidence on propositional knowledge stems from another experiment conducted by Gilbert and colleagues.[50] Participants read criminal vignettes and determined appropriate prison terms for each perpetrator. The crime stories contained explicitly labeled true information and false information. True or false statements were denoted by color: white statements were true while red statements were false. Individuals who underwent resource depletion during the reading of the crime vignettes (i.e., by pressing a button in response to a noise while the information was presented) were more likely to accept the false information as true, but were not more likely to accept true information as false. These increased false-as-true errors correlated with their criminal sentencing judgments. When the ostensibly false statements exacerbated the crime in the stories, resource depletion increased the criminal sentences. When the false statements mitigated the severity of the crime, resource depletion decreased the criminal sentences. Thus, resource depletion acts to increase credulity to the explicitly labeled false information. This lends additional support toward the Spinozan model of doubt, as resource depletion prevented the disbelief of information that was simultaneously comprehended and believed.

The FTT posits that the prefrontal cortex mediates "false tagging" or falsification to postrolandic association cortices. In this model, prefrontal cortex damage from strokes or tumor resections should result in a "doubt

deficit" whereby an individual has increased credulity, or tendency toward belief.[31] The idea that the prefrontal cortex is critical for "false tagging" novel information that is compulsorily, initially believed is based on several lines of evidence. First, these patients display dispositional or personality patterns that are consistent with a "doubt deficit": overconfidence, boastfulness, grandiosity, obstinacy, and egocentricity.[31,33] These personality patterns combined with clinical observations suggesting increased credulity in patients with vmPFC damage led to the design of an empirical study examining belief and doubt within this patient population. Specifically, patients with vmPFC damage, brain damaged comparison patients (i.e., patients with damage outside the vmPFC region), and healthy age-matched adults were provided with a series of advertisements that had been deemed deceptive by the Federal Trade Commission.[53] Consistent with the prediction of a doubt deficit in patients with vmPFC damage, results showed that this group was more credulous to the misleading ads than the comparison groups. Patients with vmPFC damage also presented with increased intention to purchase the products showcased in the ads. Increased credulity in these patients was found even when the deceptive ads contained a disclaimer rebutting the misleading claim, suggesting that skepticism is generally lower in these individuals. Indeed, these findings were not due to differences in general cognitive functioning, such as intelligence, memory, or reading ability. The site of the lesion was the only consistent factor related to credulity. In addition, the authors were interested in whether patients with vmPFC damage would have "forked minds," or an increased compartmentalization in their beliefs. The FTT predicts that these patients should believe many propositions and perceptions that are inconsistent with their extant knowledge, but fail to compare and falsify discordant ideas with one another. Using the same stimuli in Altemeyer's[7] authoritarian self-contradiction study,[c] it was found that patients with vmPFC damage had increased compartmentalization to their beliefs than brain damaged comparison patients and healthy adults.[54]

Again, the similarity between the psychological profile of patients with vmPFC damage and healthy authoritarians should be noted. Authoritarians tend to believe superficially appealing slogans, and patients with vmPFC damage are credulous to ostentatiously misleading ads. These patients, along with healthy authoritarians, both have an increased bias to believe information that is labeled as false. Moreover, they both have high belief self-contradiction, or an increased probability of believing conflicting ideas. These results, combined with the affective and behavioral evidence, persuasively argue that damage to the vmPFC may indeed create a profile of increased authoritarianism. However, to confirm these suspicions, a more direct assessment of authoritarianism and related attitudes in patients with vmPFC damage was essential.

5. AUTHORITARIANISM ATTITUDES IN PATIENTS WITH vmPFC DAMAGE

> Dogmatism [is] a dead give-away that the person doesn't know why he believes what he believes. ***Robert Altemeyer***

To examine authoritarianism and related attitudes, patients with vmPFC damage (see Figure 1), brain damaged comparison patients, medical comparison patients (individuals who had undergone a life-threatening but nonneurological medical event), and healthy adults from the general population were provided with scales measuring authoritarianism, religious fundamentalism, religious behaviors, specific religious beliefs, and prejudicial attitudes.[55] It was theorized that patients with vmPFC damage would show high levels of authoritarianism, religious fundamentalism, and prejudice toward outgroups. In line with these predictions, patients with damage to the vmPFC had the highest scores on scales of authoritarianism (e.g., greater endorsements of statements like, "Our country will be great if we honor the ways of our forefathers, do what the authorities tell us to do, and get rid of the 'rotten apples' that are ruining everything") and religious fundamentalism (e.g., "God has given humanity a complete, unfailing guide to happiness and salvation, which must be totally followed") relative to the comparison groups.[55] It could be argued that the increase in authoritarianism is simply a product of high religiosity in these patients (i.e., an individual difference variable which is completely unrelated to their brain damage). However, when items on the authoritarianism scale that explicitly mentioned topics of religion were removed, the authoritarianism differences between the groups survived.[55] Moreover, the results could not be accounted for by differences in general cognitive functioning, demographic variables, religious affiliation, religious upbringing, or religious service attendance. Neither an aversive medical event, per se, nor brain damage, per se, led to the high levels of religious beliefs in patients with vmPFC damage.

This research suggests that if individuals with vmPFC lesions have a deficit in the ability to "tag" incoming information as false, they may rely on authorities to provide information for them, leading them to hold beliefs more consistent with authority figures. Thus, the authoritarian characteristics we see in patients with vmPFC

[c] See above for a discussion.

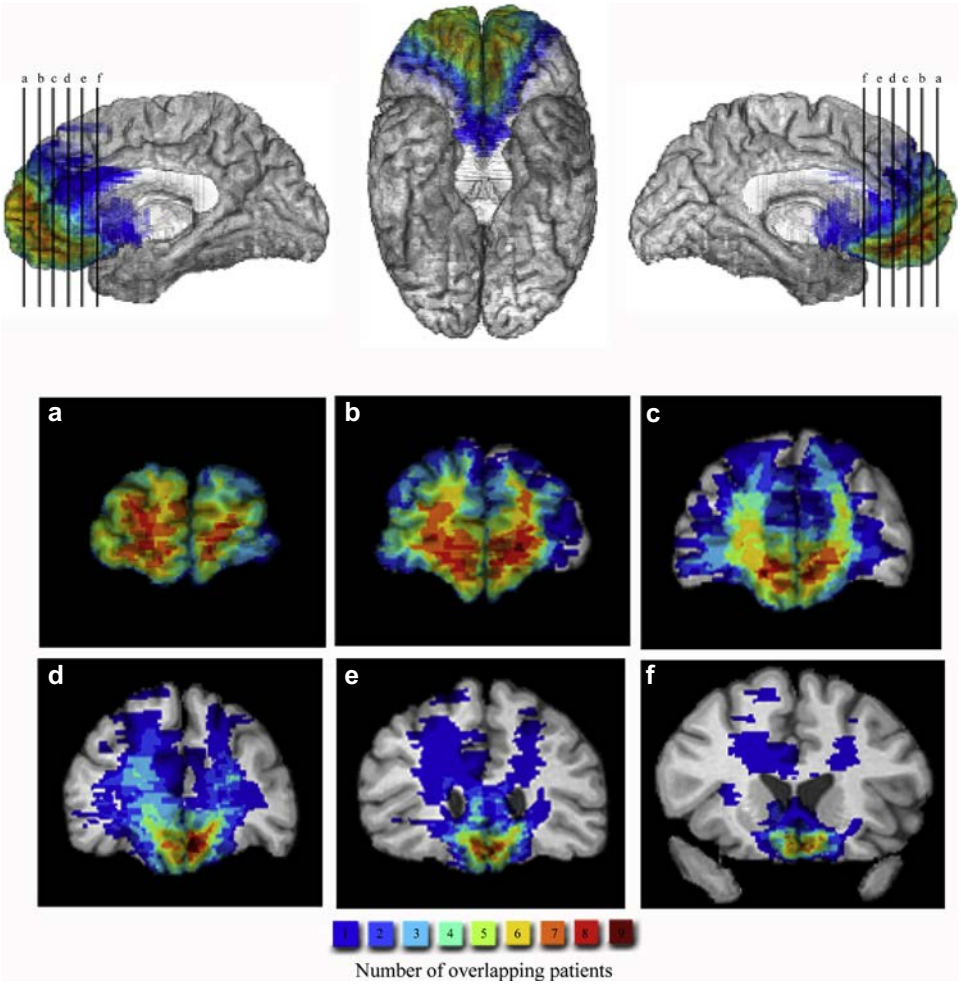

FIGURE 1 Lesion overlap of vmPFC patients. Lesions of the vmPFC patients displayed in mesial and coronal slices. The color bar indicates the number of overlapping lesions at each voxel.

damage may stem from an underlying "false tagging" dysfunction. Damage to this region is associated with the personality profile of authoritarianism across several domains (affective, cognitive, behavioral, and attitudinal). It is hypothesized that these characteristics may be the product of a decreased ability to doubt or falsify information. Rather than having a reduced motivational desire to think independently (see introductory quote by Eichmann), we argue that patients with vmPFC damage have a reduced ability to reject authoritarian direction. This general deficit in the ability to reject propositions coupled with a decreased emotional aversion toward harming others[56] suggests damage to the vmPFC may create the ideal henchman: an individual with high submissiveness to authorities and high aggressiveness toward others. Indeed, Milgram's[3] case description of Mr Bruno Batta, who displayed extreme submissiveness as he unemotionally forced the learner's hand on the shock plate in the touch-proximity experiment, contains striking parallels to patients with vmPFC damage characterized by blunted emotions[33] and stagnant autonomic responses to provocative social stimuli.[36] Behavioral paradigms in these patients measuring tractability toward authorities and aggression against others would help solidify these findings. Future research will need to address behavioral outcomes in authoritarian situations.

6. NEURAL CORRELATES OF PREJUDICE

> A prejudice, unlike a simple misconception, is actively resistant to all evidence that would unseat it. ***Gordon Allport***

As mentioned above, authoritarianism is strongly associated with explicit prejudice toward outgroups.[13] In the examination of authoritarian attitudes in lesion patients, it was found that patients with vmPFC damage also displayed high explicit prejudice toward ethnic minorities and homosexual individuals.[54] Thus, when patients with vmPFC damage, brain damaged

comparison patients, and healthy age-matched adult participants are given prejudicial statements, such as "Many minorities are spoiled; if they really wanted to improve their lives, they would get jobs and get off welfare" and "Homosexuals should be forced to take whatever treatments science can come up with to make them normal," only the patients with vmPFC damage tend to show increased prejudicial endorsement. This is additional evidence that patients with damage to this region are less likely to doubt authoritarian ideals and the general social milieu. These findings are compatible with the Allportian contemporary view of prejudice: prejudice is a failure of a cognitive control process to compensate for automatic, unintentional stereotyping. Research suggests that executive processes are recruited in order to suppress the prejudice behavior and stereotypes that come to mind unintentionally and automatically.[20,23,57] The FTT argues that "false tagging" can account many executive processes, including general inhibition, cognitive switching, planning, decision-making, attentional focusing, and working-memory maintenance, that are dependent on the prefrontal cortex.[58] Thus, damage to the prefrontal cortex should lead to decreased inhibition of automatic stereotypes, which result in higher prejudice toward outgroups.

Several neuroimaging studies in healthy individuals support this finding. In an fMRI study, researchers investigated whether differences in racial bias among white participants predict the depletion of executive resources during later contact with black individuals.[24] In this experiment, white participants were provided with sets of unfamiliar black faces, and brain activity was assessed. Racial bias predicted activity in the prefrontal cortex in response to the stimuli shown during the task. Individuals then had an interracial interaction and afterward were given the Stroop interference task (a neuropsychological test requiring executive control). Results showed that activity in the prefrontal cortex during the fMRI task predicted Stroop interference and mediated the relationship between racial bias and Stroop interference. This research supports the idea that executive function resource depletion can occur via interracial contact. The prefrontal cortex critically mediates both cognitive control during interracial contact and the Stroop task. It also supports the idea that prejudice is increased when cognitive control and the prefrontal cortex are compromised.

In addition, individuals who show the ability to take the perspective of and have empathy toward others reveal reduced prejudice compared to those who do not.[28,59,60] As described above, patients with prefrontal damage have known deficits in empathy and perspective taking.[33] Thus, both from a strictly cognitive perspective and a social-affective angle, the prefrontal cortex is considered a critical mediator for lower prejudicial beliefs.

Other studies examined the roles of the prefrontal cortex (as a mediator of cognitive control) and the amygdala (as a mediator for racially-induced fear). In one fMRI study, white egalitarian-motivated participants were shown black and white faces at fast or slow speeds in the scanner.[61] To create more of a racially negative stereotypic environment, participants listened to violent rap music in the background. In other conditions, participants either listened to no music or death metal. Results showed that only the violent rap music condition showed amygdala activation for black faces, and this activation persisted during slow exposure. The amygdala response positively covaried with activation in a region of the prefrontal cortex often associated with cognitive control. The authors concluded that while white individuals are successful at controlling an initial arousal reaction (amygdala response) to a black target in a neural context, this arousal response is not downregulated in the presence of negative stereotypical cues.

One of the most heavily used tasks that putatively measures only the implicit or automatic prejudicial component is the implicit association test (IAT).[62] The IAT purports to measure the strength of association between concepts, such as white and black, and attributes, such as good and bad. For instance, in white individuals that show no race preference on explicit measures, there is a strong preference for positive stereotypes of white faces rather than black faces.[63] Authoritarianism strongly correlates with both racial and homosexual implicit prejudice as measured by the IAT.[64,65] Implicit measures, such as the IAT, have been consistently associated with amygdala activation.[66,67] While one might predict prefrontal cortex structural integrity to have no effect on implicit measures of prejudice, several studies have shown that damage to the prefrontal cortex affects implicit stereotyping.[68,69] Indeed, patients with lesions to the vmPFC have shown increased stereotypical attitudes on the IAT.[69] This result and other studies have suggested that the IAT is a rather poor measure of implicit attitudes in isolation.[70,71] The IAT indices likely reflect both automatic and controlled components (the latter involving some prefrontal cortex mediation).[71] Nevertheless, the extant evidence implicates a critical role for the prefrontal cortex in the mitigation of involuntary, believed prejudicial attitudes and stereotypes.

7. CONCLUSION

> Punishment may make us obey the orders we are given, but at best it will only teach an obedience to authority, not a self-control which enhances our self-respect. ***Bruno Bettelheim***

This chapter has reviewed psychological and neuropsychological evidence on authoritarianism and prejudice, attributes that are commonly associated with obedience

to authority. It is clear that tendencies toward authoritarian attitudes and prejudicial beliefs are the culmination of environmental and genetic factors; however, we provide research suggesting that circumscribed damage to the ventromedial prefrontal cortex may act to *create* authoritarian individuals. On a battery of cognitive and psychometric tests, patients with lesions to this region show a profile consistent with submissiveness to authoritarian commands intent on harming others and aggressiveness in the name of authority, mirroring the profile of healthy authoritarians.[7] Furthermore, patients with vmPFC damage also present marked prejudicial beliefs toward ethnic and homosexual minorities. Neuroimaging studies complement these neuropsychological findings and provide evidence that the vmPFC and amygdala are critical structures involved in inhibiting and facilitating attitudes toward outgroups. These results beg more questions: what do these findings mean on a broader societal level? How can this information be interpreted within the general population of authoritarian individuals?

Certainly these findings do *not* mean that individuals who are high on scales of authoritarianism or religious fundamentalism have damage to the ventromedial prefrontal cortex.[55] We consider authoritarianism and religiosity to be multidetermined, with several factors beyond brain integrity leading to one's particular ensemble of authoritarian and religious beliefs. Indeed, it is improbable that even extreme cases of obedience to authority, such as Otto Eichmann, can be explained by neurological injury. As much as it may seem fitting, we cannot retrospectively assign brain damage to Eichmann or any other individual who holds authoritarian beliefs. The more restricted claim to be made is that damage to the vmPFC may act to *increase the likelihood* that an individual holds authoritarian and religious beliefs. To reiterate, it appears probable that damage to the vmPFC promotes the authoritarian psychological profile. That being said, we would be remiss not to mention the case of Dr Robert Ley, another Nazi henchman who authorized, directed, and participated in crimes against humanity. Ley committed suicide on October 25, 1945, and his autopsy showed a "long-standing degenerative process of the frontal lobes."[72] This is likely a curious coincidence, in that brain damage of Nazi officers probably played an insignificant role during the Nazi scourge. However, one could speculate that in some individuals, vmPFC dysfunction could enable an authoritarian mind-set that may be selected for by military hierarchy.

Further studies should try to address whether patients with vmPFC damage are more obedient to authorities when instructed to hurt others. However, given the obvious ethical implications of such a design (especially when considering this vulnerable and valuable subject population), any potential study will have considerable methodological constraints in direct examination of the question.

Despite this, a significant developmental implication garnered from this research is that children may be especially susceptible to belief and subsequently vulnerable to prejudicial and authoritarian attitudes.[73] Prejudicial attitudes are often implicitly learned in childhood, and exposure to authoritarian-style parenting methods may act to increase exposure to authoritarian principles.[7,74] This environment, coupled with the notion that the prefrontal cortex is still developing in childhood,[75] may place these children at a higher probability of becoming authoritarians in adulthood. On the other end of the developmental spectrum, older adults may be at a higher risk of authoritarian and prejudicial beliefs as their prefrontal cortex integrity declines with age.[76] Further research is warranted in both of these developmental populations to help illuminate potential mechanisms behind the development of the authoritarian profile.

While authoritarianism has often been viewed as a negative factor in society (largely from its correlation to prejudice of outgroup members), it also has been shown to correlate with high levels of in-group cooperation.[77] Increased adherence of commands and instruction can also be good for a society and individuals (assuming that the commands are adaptive for the group). To be sure, adherence to authoritarian instruction often circumvents disadvantageous, painful, or even deadly trial-and-error learning (e.g., *"Don't stick a knife into an electric outlet"*). Moreover, authoritarianism may lead to reduced mental distress,[78] and thus enable increased positive affect in one's life. Authoritarianism is certainly not a uniformly negative individual difference variable. Rather, the context (and more specifically, the quality of the instruction to the individual and society) determines the beneficence or malfeasance of authoritarianism.

Stanley Milgram certainly did not anticipate the degree to which individuals would be willing to shock innocent participants at extreme levels in his experimental task.[3] Indeed, it is likely that Milgram's findings were at least partly attributed to the generalized cultural acceptance of obedience to authority in the era of his study. However, a recent (partial) replication of Milgram's study demonstrated no significant differences between the percentages of participants who continued to administer electric shocks to the "learner" than in Milgram's study.[79] The author of this study concluded that although societal attitudes on obedience may have changed, this has not had an effect on obedience to authority over the past 45 years. This suggests that authoritarianism may be less dependent on environmental and situational factors and more driven by biological mechanisms. These neural and biological underpinnings may play a critical role in identifying henchmen-like individuals that are prone to committing aggressive acts in the name of authority.

References

1. Eichmann OA. *Adolf Eichmann: Memoirs*. Jewish Virtual Library; 1999.
2. Robinson J. *And the Crooked Shall Be Made Straight: The Eichmann Trial, the Jewish Catastrophe, and Hannah Arendt's Narrative*. Philadelphia: Jewish Publication Society; 1965.
3. Milgram S. *Obedience to Authority*. New York: Harper and Row Publishers; 1974.
4. Benjamin LT, Simpson JA. The power of the situation: the impact of Milgram's obedience studies on personality and social psychology. *Am Psychol*. 2009;64:12–19.
5. Adorno TW, Frenkel-Brunswik E, Levinson DJ, Sanford RN. *The Authoritarian Personality*. New York: Harper and Row Publishers; 1950.
6. Altemeyer B. *Right-wing Authoritarianism*. Manitoba: University of Manitoba Press; 1981.
7. Altemeyer B. *The Authoritarian Specter*. Cambridge: Harvard University Press; 1996.
8. Van Hiel A, Duriez B, Kossowska M. The presence of left-wing authoritarianism in western Europe and its relationship with conservative ideology. *Political Psychol*. 2006;27:769–793.
9. McFarland SG. On the eve of war: authoritarianism, social dominance and American students' attitudes toward attacking Iraq. *Pers Soc Psychol Bull*. 2005;31:360–367.
10. Walker WD, Rowe RC, Quinsey VL. Authoritarianism and sexual aggression. *J Pers Soc Psychol*. 1993;65:1036–1045.
11. Sibley CG, Duckitt J. Personality and prejudice: a meta-analysis and theoretical review. *Pers Soc Psychol Rev*. 2008;12:248–279.
12. Johnson MK, LaBouff JP, Rowatt WC, Patock-Reckham JA, Carlisle RD. Facets of right-wing authoritarianism mediate the relationship between religious fundamentalism and attitudes toward Arabs and African-Americans. *J Sci Study Relig*. 2012;51:128–142.
13. Rowatt WC, Shen MJ, LaBouff JP, Gonzalez A. Religious fundamentalism, right-wing authoritarianism, and prejudice. In: Paloutzian RF, Park CL, eds. *Handbook of the Psychology of Religion and Spirituality*. 2nd ed. New York: Guilford Press; 2013:457–475.
14. Voigtlander N, Voth H. Nazi indoctrination and anti-Semitic beliefs in Germany. *Proc Natl Acad Sci*. 2015.
15. Altemeyer B, Hunsberger B. Authoritarianism, religious fundamentalism, quest, and prejudice. *Int J Psychol Relig*. 1992;2:113–133.
16. Christopher AN, Mull MS. Conservative ideology and ambivalent sexism. *Psychol Women Q*. 2006;30:223–230.
17. Peterson BE, Doty RM, Winter DG. Authoritarianism and attitudes toward contemporary social issues. *Pers Soc Psychol Bull*. 1993;19:174–184.
18. Asbrock F, Sibley CG, Duckitt J. Right-wing authoritarianism and social dominance orientation and the dimensions of generalized prejudice: A longitudinal test. *Eur J Pers*. 2010;24:324–340.
19. Allport GW. *The Nature of Prejudice*. Cambridge: Addison-Wesley; 1954.
20. Payne BK. Conceptualizing control in social cognition: how executive functioning modulates the expression of automatic stereotyping. *J Pers Soc Psychol*. 2005;89:488–503.
21. Biernat M, Vescio TK, Theno SA, Crandall CS. Values and prejudice: toward understanding the impact of American values on outgroup attitudes. In: Seligman C, Olson JM, Zanna MP, eds. *The Psychology of Values: The Ontario Symposium*. Hillsdale: Erlbaum; 1996.
22. Wagner U, Zick A. The relation of formal education to ethnic prejudice: its reliability, validity, and explanation. *Eur J Soc Psychol*. 1995;25:41–56.
23. von Hippel W, Silver LA, Lynch ME. Stereotyping against your will: the role of inhibitory ability in stereotyping and prejudice among the elderly. *Pers Soc Psychol Bull*. 2000;26:523–532.
24. Richeson JA, Shelton JN. When prejudice does not pay: effects of interracial contact on executive function. *Psychol Sci*. 2003;14:287–290.
25. Heaven P, Ciarrochi J, Leeson P. Cognitive ability, right-wing authoritarianism, and social dominance orientation: a five-year longitudinal study amongst adolescents. *Intelligence*. 2011;39:15–21.
26. Wegmann MF. *Information Processing Deficits of the Authoritarian Mind*. Santa Barbara: Psychology, The Fielding Institute; 1992.
27. Backstrom M, Bjorklund F. Structural modeling of generalized prejudice. *J Individ Differ*. 2007;8:10–17.
28. McFarland SG. Authoritarianism, social dominance, and other roots of generalized prejudice. *Political Psychol*. 2010;31:453–477.
29. Harlow HF. Recovery from the passage of an iron bar through the head. *Hist Psychiatry*. 1993;4:274–281.
30. Damasio A. *Decartes' Error: Emotion, Reason and the Human Brain*. New York: Grosset/Putnam; 1994.
31. Asp EW, Tranel D. False tagging theory: toward a unitary account of prefrontal cortex function. In: Stuss DT, Knight RT, eds. *Principles of Frontal Lobe Function*. 2nd ed. New York: Oxford University Press; 2013:383–416.
32. Stuss DT, Benson DF. Neuropsychological studies of the frontal lobes. *Psychol Bull*. 1984;95(1):3–28.
33. Damasio AR, Anderson SW, Tranel D. The frontal lobes. In: Heilman KM, Valenstein E, eds. *Clinical Neuropsychology*. 5th ed. New York: Oxford University Press; 2012:417–465.
34. Tranel D, Anderson SW, Benton A. Development of the concept of "executive function" and its relationship to the frontal lobes. In: Boller F, Grafman J, eds. *Handbook of Neuropsychology*. Vol. 9. Amsterdam: Elsevier; 1994:125–148.
35. Tranel D. Emotion, decision making, and the ventromedial prefrontal cortex. In: Stuss DT, Knight RT, eds. *Principles of Frontal Lobe Function*. New York: Oxford University Press; 2002:338–353.
36. Damasio AR, Tranel D, Damasio H. Individuals with sociopathic behavior caused by frontal damage fail to respond autonomically to social stimuli. *Behav Brain Res*. 1990;41(2):81–94.
37. Barrash J, Asp EW, Markon K, Manzel K, Anderson SW, Tranel D. Dimensions of personality distrubance after focal brain damage: investigation with the Iowa Scales of Personality Change. *J Clin Exp Neuropsychol*. 2011;33:833–852.
38. Giancola PR. Evidence for dorsolateral and orbital prefrontal cortical involvement in the expression of aggressive behavior. *Aggressive Behavior*. 1995;21(6):431–450.
39. Grafman J, Schwab K, Warden D, Pridgen A, Brown HR, Salazar AM. Frontal lobe injuries, violence, and aggression. *Neurology*. May 1, 1996;46(5):1231.
40. Bechara A, Tranel D, Damasio H. Characterization of the decision-making deficit of patients with ventromedial prefrontal cortex lesions. *Brain*. 2000;123:2189–2202.
41. Bechara A, Tranel D, Damasio H, Damasio AR. Failure to respond autonomically to anticipated future outcomes following damage to prefrontal cortex. *Cereb Cortex*. 1996;6(2):215–225.
42. Young L, Bechara A, Tranel D, Damasio H, Hauser M, Damasio A. Damage to ventromedial prefrontal cortex impairs judgment of harmful intent. *Neuron*. 2010;65:845–851.
43. Koenigs M, Tranel D. Irrational economic decision-making after ventromedial prefrontal damage: evidence from the ultimatum game. *J Neurosci*. 2007;27:951–956.
44. Cheetham M, Pedroni AF, Antley A, Slater M, Jäncke L. Virtual milgram: empathic concern or personal distress? Evidence from functional MRI and dispositional measures. *Front Hum Neurosci*. 2009;3:1–13.
45. Slater M, Antley A, Davison A, et al. A virtual reprise of the Stanley Milgram obedience experiments. *PLoS One*. 2006;1(1):e39.
46. Festinger L. *A Theory of Cognitive Dissonance*. Stanford: Stanford University Press; 1957.
47. Gilboa A, Moscovitch M. The cognitive neuroscience of confabulation: A review and a model. In: Baddeley AD, Kopelman MD, Wilson BA, eds. *Handbook of Memory Disorders*. 2nd ed. Chichester: John Wiley; 2002:315–342.

48. Berlyne N. Confabulation. *Br J Psychiatry*. 1972;120:31–39.
49. Gilbert DT. How mental systems believe. *Am Psychol*. 1991;46: 107–119.
50. Gilbert DT, Tafarodi RW, Malone PS. You can't not believe everything you read. *J Pers Soc Psychol*. 1993;65:221–233.
51. Mandelbaum E. Thinking is believing. *Inquiry*. 2014;57:55–96.
52. Gilbert DT, Krull DS, Malone PS. Unbelieving the unbelievable: some problems in the rejection of false information. *J Pers Soc Psychol*. 1990;59:601–613.
53. Asp EW, Manzel K, Koestner B, Cole CA, Denburg NL, Tranel D. A neuropsychological test of belief and doubt: damage to ventromedial prefrontal cortex increases credulity for misleading advertising. *Front Neurosci*. 2012;6:100.
54. Asp EW. *A Neuroanatomical Investigation of Belief and Doubt*. Iowa City: Neurology, University of Iowa; 2012.
55. Asp EW, Ramchandran K, Tranel D. Authoritarianism, religious fundamentalism, and the human prefrontal cortex. *Neuropsychology*. 2012;26:414–421.
56. Koenigs M, Young L, Adolphs R, et al. Damage to the prefrontal cortex increases utilitarian moral judgements. *Nature*. 2007;446:908–911.
57. Devine PG. Stereotypes and prejudice: their automatic and controlled components. *J Pers Soc Psychol*. 1989;56:5–18.
58. Asp EW, Manzel K, Koestner B, Denburg NL, Tranel D. Benefit of the doubt: a new view of the role of the prefrontal cortex in executive functioning and decision making. *Front Neurosci*. 2013;7(86).
59. Hodson G, Busseri MA. Bright minds and dark attitudes: lower cognitive ability predicts greater prejudice through right-wing ideology and low intergroup contact. *Psychol Sci*. 2012;23:187–195.
60. Hodson G, Hogg SM, MacInnis CC. The role of "dark personalities" (narcissism, machiavellianism, psychopathy), big five personality factors, and ideology in explaining prejudice. *J Res Pers*. 2009;43:686–690.
61. Forbes CE, Cox CL, Schmader T, Ryan L. Negative stereotype activation alters interaction between neural correlates of arousal, inhibition and cognitive control. *SCAN*. 2012;7:771–781.
62. Greenwald AG, McGhee DE, Schwartz JLK. Measuring individual differences in implicit cognition: the implicit association test. *J Pers Soc Psychol*. 1998;74:1464–1480.
63. Ames DL, Jenkins AC, Banaji MR, Mitchell JP. Harvesting implicit group attitudes and beliefs from a demonstration web site. *Group Dyn*. 2002;6:101–115.
64. Jonathan E. The influence of religious fundamentalism, right-wing authoritarianism, and Christian orthodoxy on explicit and implicit measures of attitudes toward homosexuals. *Int J Psychol Relig*. 2008;18:316–329.
65. Rowatt WC, Franklin LM. Christian orthodoxy, religious fundamentalism, and right-wing authoritarianism as predictors of implicit racial prejudice. *Int J Psychol Relig*. 2004;14:125–138.
66. Phelps EA, O'Connor KJ, Cunningham WA, et al. Performance on indirect measures of race evaluation predicts amygdala activation. *J Cogn Neurosci*. 2000;12:729–738.
67. Kubota JT, Banaji MR, Phelps EA. The neuroscience of race. *Nat Neurosci*. 2012;15:940–948.
68. Milne E, Grafman J. Ventromedial prefrontal cortex lesions in humans eliminate implicit gender stereotyping. *J Neurosci*. 2001;21: 1–6.
69. Gozzi M, Raymont V, Solomon J, Koenigs M, Grafman J. Dissociable effects of prefrontal and anterior temporal cortical lesions on stereotypical gender attitudes. *Neuropsychologia*. 2009;47: 2125–2132.
70. Mandelbaum E. *Attitude, Inference, Association: On the Propositional Structure of Implicit Bias*. Philpapers: Philosophical Research Online; 2014:1–36.
71. Bartholow BD. Event-related brain potentials and the role of cognitive control in implicit race bias. In: Derks E, Scheepers D, Ellemers I, eds. *The Neuroscience of Prejudice*. London: Taylor and Francis; 2013:190–208.
72. Zillmer E, Harrower M, Ritzler BA, Archer RP, eds. *The Quest for the Nazi Personality: A Psychological Investigation of Nazi War Criminals*. Hillsdale: Lawrence Erlbaum Associates; 1995. Weiner IB, ed. The LEA Series in Personality and Clinical Psychology.
73. Doyle AB, Aboud FE. A longitudinal study of white children's racial prejudice as a social-cognitive development. *Merrill-Palmer Q: J Dev Psychol*. 1995;41:209–228.
74. Duckitt J. A dual process cognitive-motivational theory of ideology and prejudice. *Adv Exp Soc Psychol*. 2001;33:41–113.
75. Diamond A. Normal development of prefrontal cortex from birth to young adulthood: cognitive functions, anatomy, and biochemistry. In: Stuss DT, Knight RT, eds. *Principles of Frontal Lobe Function*. New York: Oxford University Press; 2002:466–503.
76. West RL. An application of prefrontal cortex function theory to cognitive aging. *Psychol Bull*. 1996;120:272–292.
77. Kessler T, Cohrs JC. The evolution of authoritarian processes: fostering cooperation in large-scale groups. *Group Dyn: Theory Res Pract*. 2008;12:73–84.
78. Van Hiel A, De Clercq B. Authoritarianism is good for you: right-wing authoritarianism as a buffering factor for mental distress. *Eur J Pers*. 2009;23:33–50.
79. Burger JM. Replicating Milgram: would people still obey today? *Am Psychol*. 2009;64:1–11.