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From Dehumanization and Objectification, to Rehumanization: Neuroimaging Studies on the Building Blocks of Empathy

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Abstract

Social neuroscience offers a window onto the mental origins of empathy. People must appreciate another mind, in order to empathize. People first categorize the other as human, assuming a mind, and then differentiate among social categories according to universal dimensions of perceived traits: warmth and competence. The least warm and competent groups (poor people, homeless, drug addicts) may even be denied humanity and a meaningful mind, according to both neural and behavioral responses to allegedly disgusting outcasts. Other groups may be instead envied and viewed as tools or automatons, that is, objectified. The patterns can reverse when perceivers must consider the other's preferences, that is, appreciate the other's mind.

Keywords

social cognition; social neuroscience; empathy; dehumanization; objectification; mPFC; amygdala; prejudice; mind

Empathy for another's happiness and suffering depends fundamentally on recognizing that the other has a mind—minds—that is, the same capacities for thought, emotion, desire, intention, and self-awareness as ourselves. Without appreciating others' minds, empathy makes no sense. But how do we know that someone is suffering? What processes help us understand others' inner experiences? And what determines whether we engage those processes?

Psychology's concept of *mind-perception* helps answers these questions. Arguably, no single conviction more influences our responses to another than believing that it possesses a mind like our own.¹ After all, this belief determines whether we consider another to be experiencing help or harm in the first place. Simply put, we treat others according to the perceived qualities and capacities of their minds. People variably ascribe minds to others: Our lab recently demonstrated that people from the most stigmatized groups fail to elicit the patterns of neural activity apparently necessary for understanding others' minds.

People do not necessarily ascribe a fully-experiencing mind to another human—and thus, inevitably recognize that entity *as* fully human. Such studies illuminate historical and contemporary failures of empathy toward social outgroups—failures that, in extreme cases, enable dehumanization and permit torture and genocide. Such cases highlight the importance of empathy—and demonstrate the urgency of identifying factors that impede it.

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Fundamental Processes of Social Cognition

Social cognition springs from immediate categorization, which perceivers may then elaborate, given motivation and capacity, according to the continuum model of impression formation.^{2,3} Beyond our behavioral experiments, our lab's social neuro-imaging work locates these instantaneous, often unconscious responses, and breaks new ground in understanding the most fundamental social category, that is, being human.

Considering another person as fully human requires appreciating the other's mind (intentions, thoughts, feelings). Social neuroscience reliably implicates regions of medial prefrontal cortex in mind perception (mPFC).^{4,5} The literature had confounded social/nonsocial comparisons with a variety of factors (true/false beliefs, self-relevance, positivity, animation). One of our first studies used verbal information to hold all else constant, except the implications for the other's mind. Specifically, the study manipulated three behaviorally-established dimensions (i.e., a behavior's consistency, distinctiveness, and consensus), which reliably attribute causality for someone's behavior to that person's intentions, as opposed to some factor outside the person. Of the 8 (2^3) standard combinations, only 2 reliably produce dispositional attributions in the behavioral literature; our study showed that those 2 combinations uniquely activate mPFC above a fixation baseline.⁶ This pattern does not occur for objects acting in the same ways as people,⁷ further delimiting what people perceive as uniquely human in social cognition.⁸

Having categorized someone as human, two fundamental dimensions define social cognition: perceived trait warmth and competence.⁹ Perceivers first seek to know whether another intends good or ill, inferring traits of being warm, friendly, trustworthy, and sincere, or not. Second, perceivers seek to know whether the other can enact those intentions, inferring traits of being competent, capable, and agentic, or not. Prior behavioral work had contrasted only the most positive (warm, competent ingroups and allies) against the most negative (hostile, incompetent outcasts), but this new framework hypothesizes important ambivalent combinations, high on one dimension and low on the other. For example, older people are stereotyped as incompetent but warm; rich people are stereotyped as competent but cold. Each of the four combinations elicits unique emotions, respectively: pride, disgust, pity, and envy. Behavioral studies support this Stereotype Content Model.

Neuroimaging Studies of Dehumanization and Objectification

Our lab's imaging studies have pinpointed a role for mind perception in these distinct stereotypes. The first studies homed in on the most negatively-viewed groups, the low-low quadrant, which includes poor people of any race, as well as specifically homeless people and drug addicts. Participants viewed instantly recognizable images of unknown individuals, pretested to represent each quadrant of the warmth x competence space, and controlled along a dozen extraneous variables. The images reliably evoked the predicted emotions, in self-reports, and images of the allegedly disgusting homeless and addicted people activated insula, consistent with those reports. What's more, in a dramatic reversal of the now-standard mPFC activation in social cognition, these outcasts uniquely failed to activate mPFC.¹⁰ The nonsignificant effect-size for this cell was half that for the other three quadrants. What's more, it corresponded to other participants' behavioral indicators of dehumanized perception: failure to use intent verbs in describing the target's typical day, self-reported failure to attribute a mind to them, and self-reported unlikelihood of interacting together.¹¹ The neuro-imaging data took our behavioral evidence beyond the original theory and fed back to novel predictions for new behavioral studies on the psychological science of dehumanized perception.

Outcasts such as homeless people are not the only ones ever dehumanized. Granted, dehumanization can target allegedly disgusting outgroups, who are likened to vermin (rodents, insects), as here. But another form of dehumanization, which might be termed objectification, views people as automatons (tools, robots, machines). Groups targeted for this kind of objectification include the high-competent, but low-warmth outgroups, such as rich people, but also entrepreneurial outsiders (in the U.S., currently, Asians, Jews). Another such group is nontraditional women (female professionals, lesbians, feminists, and powerful seductresses or sexualized vamps).^{12,13} Seen as cold but competent, nontraditional women can threaten those men who score high on measures of hostile sexism, who may then see women as less human.¹⁴

Recent work tested such men's objectification of highly sexualized women.¹⁵ In the scanner, heterosexual men viewed partially and fully clothed images of men and women, controlled for posture, gaze, size, background, detail, and facial attractiveness. Afterwards, in a surprise recall task, they selectively recalled bodies of partially clothed women; their d' score correlated with activation in a network associated with manipulable objects; greater activity in this network predicted better recall for sexualized women's bodies. This memory-motor relationship did not occur for other targets.

Furthermore, hostile sexism predicted *deactivation* of right mPFC in response to looking at scantily-clad women, suggesting that *more hostile attitudes predict less mentalizing for sexualized women*, consistent with viewing them less socially. These findings (a) extend the meaning of dehumanization to objectification, a related but distinct phenomenon also marked by decreased mPFC activation in social cognition; (b) demonstrate deactivation correlated with a theoretically-relevant individual difference (hostile sexism), also consistent with objectification; (c) show ambivalent responding to a group normally viewed as approachable, consistent with the SCM idea of viewing this group with envy. Many questions remain, and Cikara's dissertation will pursue the issue of envied outgroups more generally, in behavioral and neuroscience research.

Social Context Matters

Differentiated responses to distinct outgroups potentially reflect distinct activation patterns, related to relevant neural systems. This does not mean that prejudice is somehow inevitably wired-in. Indeed, a final line of research shows that *neural indicators of social cognition depend on social context*. Some early social neuro-imaging studies implicated amygdala activation in Whites' responses to images of unfamiliar Blacks¹⁶. Lest this appear hard-wired racism, our study showed that social goals determine amygdala responses: only a social categorization goal (over 21?) elicits this amygdala response, whereas a nonsocial goal (dot on the photo?) eliminates it.¹⁷ Moreover, an individuating goal that requires mind perception (inferring vegetable preferences) also eliminates the amygdala activation to racial outgroups. The same task re-humanizes the lowest-of-the-low, social outcasts such as homeless people and drug addicts.¹⁸ That is, inferring vegetable preferences re-activates the mPFC for images that previously de-activated it.

Conclusion

The research so far suggests both discouraging and hopeful prospects. As bad news, the research suggests plausible mechanisms for the ill treatment of dehumanized outgroups.¹⁹ As good news, the research suggests an interplay between social neuroscience findings implicating the mPFC and neuro-economics implicating the mPFC in reward. In a Cohen-Fiske adversarial collaboration,^{20,21} paired studies found that rewards do activate mPFC regions, but more so for social than nonsocial rewards, consistent with other people as a

primary source of positive experiences. All this neuroimaging research illustrates the utility of social cognitive affective neuroscience for empathy and for human well-being.²²

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