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Dehumanized Perception: A Psychological Means to Facilitate Atrocities, Torture, and Genocide?

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Abstract

Dehumanized perception, a failure to spontaneously consider the mind of another person, may be a psychological mechanism facilitating inhumane acts like torture. Social cognition – considering someone’s mind – recognizes the other as a human being subject to moral treatment. Social neuroscience has reliably shown that participants normally activate a social-cognition neural network to pictures and thoughts of other people; our previous work shows that parts of this network uniquely fail to engage for traditionally dehumanized targets (homeless persons or drug addicts; see Harris & Fiske, 2009, for review). This suggests participants may not consider these dehumanized groups’ minds. Study 1 demonstrates that participants do fail to spontaneously think about the contents of these targets’ minds when imagining a day in their life, and rate them differently on a number of human-perception dimensions. Study 2 shows that these human-perception dimension ratings correlate with activation in brain regions beyond the social-cognition network, including areas implicated in disgust, attention, and cognitive control. These results suggest that disengaging social cognition affects a number of other brain processes and hints at some of the complex psychological mechanisms potentially involved in atrocities against humanity.

Keywords

dehumanization; social cognition; mental-state verbs; anterior insula

People talk to their computers and their cars, imputing intent and other mental states, but they avoid eye contact with the homeless panhandler in the subway, shutting out his mind and hence his humanity. Here we explore a phenomenon whereby people spontaneously fail to consider the minds of other people – they fail to engage social cognition – perceiving them instead like disgusting objects. In that sense, people dehumanize those allegedly disgusting others. Since person perception imbues the subsequent social interaction with moral norms, dehumanized perception may be necessary to facilitate extremely inhumane acts like torture against other people, robbing them of their moral protection. Indeed propaganda depicting Tutsi in Rwanda as “Inyenzi” or cockroaches, and Hitler’s classification of Jews in Nazi Germany as vermin may have facilitated atrocities like torture and genocide; both examples tag the victims as disgusting less than human creatures.

Social cognition is a higher-order cognitive process that people spontaneously recruit even to nonhuman targets, which seems to require the belief, if only temporarily, that the target has “an internal life” – conscious cognitive and emotional experiences. People can spontaneously infer mental states even for targets without actual minds. Participants infer the intentions of point-light walkers (Heberlein, Adolphs, Tranel, & Damasio, 2004) and shapes in biological motion (Heider & Simmel, 1944), objects that objectively do not have

cognitions and emotions. People also anthropomorphize a range of inanimate objects and animals (Kwan & Fiske, 2008; Gray, Gray, & Wegner, 2007). Similarly, children commonly create imaginary others, both people (imaginary friends) and objects (imaginary food treats), effortlessly interacting with these targets as if they exist (see Kwan & Fiske, 2008, for examples). Given the ease of anthropomorphism, a lack of social cognition to people is all the more striking.

Dehumanized perception is a cognitive bias characterized by spontaneous failure to think about mental contents – thoughts and feelings in a social target’s mind. Dehumanized perception may be related to the dehumanized target eliciting disgust instead of the at least partially positive social emotions generally felt in the presence of other people. Members of social categories (e.g., homeless people, drug addicts) perceived as low on both warmth and competence reliably elicit more disgust than do other social categories (Fiske, Cuddy, Glick, & Xu, 2002). People may spontaneously think about the minds of other social targets who elicit social emotions such as pride (American heroes, ingroups), envy (business people, rich people), or pity (elderly people, disabled people). According to the Stereotype Content Model, these latter social targets are perceived as high on either warmth (trustworthiness, friendliness) or competence (ability), or both, while disgust-inducing targets (homeless people and drug addicts in US samples; immigrants and poor people in all samples) are perceived as low on both trait dimensions (Fiske, Cuddy, & Glick, 2007).

One indication of dehumanized perception may be reduced activation in the social-cognition neural network (see Amodio & Frith, 2006; Overwalle, 2009, for reviews), including medial prefrontal cortex (MPFC; Harris & Fiske, 2006) and superior temporal sulcus (STS; Harris & Fiske, 2007). This suggests that a neural network critical for social interaction (Frith & Frith, 2001) may disengage when people view these disgust-inducing people. Such neural activation patterns may indicate dehumanized perception because tasks that involve social cognition typically activate this network. Besides manipulations of target persons, manipulations of social goals validate this prediction: Inferring preference, a mental-state inference, significantly increases MPFC and STS activity to these otherwise dehumanized targets (Harris & Fiske, 2007). The default, decreased social cognition neural activity to dehumanized targets, replicates across stimuli and contexts (Harris, McClure, van den Bos, Cohen, & Fiske, 2007), suggesting reliability.

However, the just described neural data do not actually show that dehumanized targets fail to engage participants in spontaneous social cognition. Here, we first present a behavioral experiment that more precisely tests existing social neuroscience implications that participants demonstrate reduced social cognition toward dehumanized targets. Participants are asked to report on a day in the life of different social targets, before rating them on a number of potential human perception dimensions. This allows us to detect which dimensions differentiate dehumanized targets from other social targets. We then present a neuroimaging study where participants view social targets before rating them on the dimensions that differentiate dehumanized targets. This allows us to detect the brain regions that correlate with dimensions that differentiate dehumanized targets.

Study 1

Different types of verbs and adjectives provide different levels of abstraction (Semin & Fiedler, 1988). Adjectives (describing words; e.g., thirsty) appear at the most abstract level; verbs are more concrete but differentiate by level of abstraction. The most abstract, *mental-state verbs*, describe actions in terms of the target’s internal state (e.g., quench). Then follow *interpretive-action verbs* that interpret the target’s action (e.g., guzzle) and finally *descriptive-action verbs* (e.g., drink) simply describe the action. The examples in

parentheses reveal the cognition behind using each type of descriptive term: Adjectives describe the person, mental-state verbs describe the mind of the person; interpretive- action verbs interpret the behavior of the person; while descriptive-action verbs describe the behavior in terms of the verb's object. People should use fewer mental-state verbs to describe a day in the life of dehumanized targets if perceivers fail to think about the contents of the target's mind.

We hypothesize reduced spontaneous social cognition to dehumanized targets previously identified by social psychological theory (Fiske et al., 2002) and whose dehumanization has been investigated so far only by neuroscience methods (Harris & Fiske, 2006). This directly tests whether participants fail to engage social cognition in response to dehumanized targets. Specifically, participants should spontaneously generate fewer mental-state verbs when describing a day in a dehumanized target's life. Additionally, folk psychology and the social psychological literature on infra- and de-humanization give us a number of dimensions that differentiate people from objects, such as the ability to experience complex emotions. Any of these dimensions may be inversely associated with dehumanized perception as well, so we also test the hypothesis that targets of dehumanized perception are rated lower on all these dimensions.

METHOD

Participants

Data came from 119 undergraduates during a group administration. Participants completed the relevant questions among a packet of judgment and decision-making surveys. No other questionnaires addressed emotion or prejudice. The sample's mean age was 20, with 62 female participants. The ethnic composition was 68 White, 19 Asian, 12 of mixed descent, and 6 Black, with the remainder not reporting.

Stimulus Materials

The independent variable was the type of pictured social target. Two pretested pictures represented each quadrant of the warmth-by-competence Stereotype Content Model (SCM; Fiske et al., 2002), as follows (the typical emotion for each pair of social targets appears in parentheses): female college student and male American firefighter (pride), business woman and rich man (envy), elderly man and disabled woman (pity), and female homeless person and male drug addict (disgust). No differences emerged within pair, so the ratings for the two pictures were averaged to generate the rating for social targets within that quadrant.

Procedure

Participants first described a day in the life of either a "particular" or an "average" pictured social target in a 2 (wording) \times 4 (SCM quadrant) between-subjects design. Wording created no differences, so all analyses collapse across wording. Each participant saw only one of the four SCM social-target types and had 15 lines to write the description. These descriptions were then coded (see below) and tested for differences in spontaneous social cognition by exploring mental-state verb use.

After imagining a day in the life of the social target, participants next rated the same social target on various dimensions. This page contained the same picture of the social target (whose typical day they had just described) and provided 7-point Likert scales to rate: warmth, competence, similarity, familiarity, perceiver's ease of attributing a mind to the target, perceiver's ease of inferring target's disposition, perceiver's empathy, responsibility of target for situation, control of target over situation, articulateness, intelligence, complex emotionality, self-awareness, target's ups and downs in life, and typical humanity. Each

participant received \$10 for completing the larger, hour-long questionnaire packet. At the end, they were debriefed, paid, and thanked.

Coding Scheme

A coding scheme provided by Semin and Fiedler (1988) tests the hypothesis of less mentalizing to dehumanized targets. First, a pair of independent raters separately classified 200 verbs, resulting in an inter-rater $r(100) = .75, p < .05$. They then extracted and independently classified verbs and adjectives in the descriptions of the social targets. We averaged across raters, creating a single score per participant on each type of verb and adjective.

Data Analysis Strategy

One-way, four-level ANOVAs, followed by a 3:1 deviant-cell contrast, best examined the data, because our a priori hypothesis concerns a deviant cell in the four-cell SCM warmth-by-competence space. The one-way ANOVA, with focused contrasts, allows a precise test of the deviant-cell hypothesis. This strategy isolates each cell in turn, which assesses unique characteristics that combine the trait dimension main effects, as well as their interaction. (Our hypothesis for a 3:1 deviant cell would be diluted in a traditional 2×2 across 3 degrees of freedom – two main effects and an interaction – whereas the 3:1 contrast places our prediction in a single degree of freedom. Thus, a 3:1 deviant-cell contrast analysis tests for differences unique to the dehumanized targets.)

RESULTS

Verb Usage

No significant differences distinguished the total number of words used to describe the different social targets, $F(3, 93) = .20, p = .90$. Therefore, the absolute number of words appears in the inferential statistics. The 3:1 deviant-cell contrast analyses revealed no significant differences in adjectives, interpretive-action verbs, or descriptive-actions verbs used in the descriptions of any type of social target. However, as predicted, a 3:1 deviant-cell contrast revealed that participants use significantly fewer mental-state verbs to describe a day in the life of dehumanized targets, $t(86.22) = 2.52, p < .05$. No significant differences in mental-state verb use appear for any of the other social targets (see Figure 1 for means). Participants are spontaneously inferring the contents of the dehumanized targets' minds *less* often than other social targets. No other type of verb or adjective is used differently to describe these or any other social targets.

Ratings Data

Next, 3:1 contrast analysis on each rating dimension independently revealed as predicted that dehumanized targets were rated significantly *lower* than the other three target types, on each of the following: competence $t(115) = -6.11, p < .05$, warmth $t(115) = -3.26, p < .05$, similarity $t(115) = -3.53, p < .05$, familiarity $t(115) = -3.36, p < .05$, articulateness $t(115) = -5.23, p < .05$, intelligence $t(115) = -7.19, p < .05$, ease of mentalizing $t(115) = -2.26, p < .05$, and ease of inferring dispositions $t(115) = -3.10, p < .05$; see Table 1 for means. Significantly *more* ups and downs in life appear for these social targets, $t(55.54) = 3.49, p < .05$, and participants also viewed them as marginally less typically human, $t(114) = -1.72, p = .09$. No significant differences appear on perceived experience of complex emotions, separating apparent dehumanization from previous work on infra-humanization. Self-awareness, suggesting that participants think the target has an "inner life," responsibility for their situation, and control over their situation, suggesting, respectively, that participants think the target has autonomy and agency, produced no significant differences either.

Overall, these findings support the hypothesis, showing that dehumanized targets are rated significantly lower on 10 out of 14 rating dimensions that in past research are social psychological or folk dimensions of dehumanization.

Study 2

The Study 1 results are the first rating-data demonstration of reduced spontaneous social cognition to traditionally dehumanized people. What is also interesting is the finding that a number of human-perception dimensions differentiate these targets from others. We conducted an exploratory neuroimaging study to follow up on these findings, asking what are the neural regions that correlate with the dimensions of human perception that differentiate dehumanized targets.

Participants

The participants were 20 undergraduate students who took part in the study for course credit. Their mean age was 19.5, with 9 males and 4 students of Black, Asian, or mixed descent. All participants had normal or corrected vision, were right-handed, and had no history of mental trauma or illness.

Scanning Parameters

All fMRI scanning was conducted at Princeton's Center for the Study of Brain, Mind, and Behavior, using a 3.0 Tesla Siemens Allegra head-dedicated MR scanner. A Dell computer projected images onto a screen mounted at the rear of the scanner bore, which participants viewed while supine through a series of mirrors. Prior to the functional echo planar image (EPI) acquisitions, participants received a short series of structural MRI scans to allow for subsequent functional localization. These scans took approximately 12 min and included: (1) a brief scout for landmarking; (2) a high-resolution (0.5 mm × 0.5 mm × 1.0 mm) T1-weighted anatomical image whole-brain MPRAGE sequence for later localization and intersubject registration. Functional imaging then proceeded using an EPI sequence that allowed for whole-brain coverage (32 3 mm axial slices; 1 mm gap, TR: 2 s; TE: 30 ms). In-plane resolution was 3 mm × 3 mm (192 mm FOV, 64 × 64 matrix).

Procedure

Participants were instructed before scanning that they would lie in the scanner while pictures of different people appeared on the screen. Their task was simply to look at the pictures. There were 15 pictures depicting each type of social target from the SCM. As in Study 1, all 60 social targets were previously rated to elicit primarily pride, envy, pity, or disgust. Social targets appeared on the screen for 500 ms. The short display time was chosen to prevent participants' saccades away. A red fixation-cross separated each picture and remained on the screen for 11.5 s. One second before a picture appeared, the fixation-cross turned from red to green. The green fixation cross-cued the participant, and a randomly chosen picture of a social target appeared. No social targets were repeated, and a random ordering of social target pictures was used for each participant. The scanning run took 12.5 min.

After scanning, participants viewed gray-scale copies of the social target pictures they had seen in the imaging session, rating them on warmth, competence, similarity, familiarity, typically human, ease of inferring disposition, ease of inferring mental content, intelligence, ups and downs in life, and articulateness, using a 7-point Likert scale. These ratings took an additional hour. Participants were then debriefed, credited, and thanked.

fMRI Data Analysis

Both image preprocessing and statistical analysis used Brain Voyager QX (<http://www.brainvoyager.de>). Before statistical analysis, image preprocessing consisted of: (1) slice acquisition order correction; (2) 3D rigid-body motion correction; (3) voxelwise linear detrending across time; (4) temporal bandpass filtering to remove low- and high-frequency (scanner and physiology related) noise. Distortions of EPI images were corrected with a simple affine transformation.

Functional images were registered to the structural images and interpolated to cubic voxels. After coregistering participants' structural images to a standard image using a 12-parameter spatial transformation, their functional data were similarly transformed, along with a standard moderate degree of spatial smoothing (Gaussian 8 mm FWHM).

Analysis Strategy

To test the hypotheses, we built a parametric regressor for each rating dimension, based on the rating of each pictured social target on that dimension for each participant. This gave us each participant's rating of the stimuli set on each of the 10 human-perception dimensions that previously differentiated dehumanized targets from other people. We then applied these regressors from each subject to the imaging data as a random effects general linear model for the 500 ms when participants were looking at the pictures. Therefore, any neural region that is active shows a parametric modulation with the participants' rating of all 60 social targets pictured on that dimension. This allows us to pull out neural regions that correlate with a participant's ratings on each human-perception dimension, independent of the social target pictured. We report regions of interest (ROIs) that are significant at $p < .001$ and contain at least 10 contiguous voxels.

Results and Discussion

We found that 7 out of the 10 human-perception rating dimensions successfully activated ROIs that met our criteria for reporting (intelligence, articulateness, and ease of inferring dispositions failed to meet our criteria). Most notably, we found parametric modulation of the right anterior insula with warmth ratings, $t(19) = -4.31$, $p < 4.76E^{-4}$, partial $\eta^2 = 0.49$, at $x = 38$, $y = 13$, $z = 15$, 312 voxels (see Figure 2a), suggesting that the more warm participants view a social target, the less activation in anterior insula. The anterior insula has been implicated in disgust (Calder, 2003), interoception (Craig, 2009), and as part of a pain and punishment neural network (Seymour, Singer, & Dolan, 2007). Nonetheless, it is difficult to rely on a reverse inference to make conclusions about why trait warmth ratings modulate this or any other part of the brain. However, the fact that this most important person perception dimension negatively correlates with a neural region implicated in these processes suggests that increased insula activation probably facilitates dehumanization (and perhaps harmful behaviors such as torture).

We also found parametric modulation of the left posterior insula with competence ratings, $t(19) = 4.27$, $p < 5.21E^{-4}$, partial $\eta^2 = 0.49$, at $x = 38$, $y = 13$, $z = 15$, 54 voxels, such that increased competence ratings of social targets result in increased posterior insula activation.

Ratings of typical humanity modulated activity in the anterior cingulate cortex (ACC), $t(19) = -4.01$, $p < 7.69E^{-4}$, partial $\eta^2 = 0.46$, at $x = 5$, $y = 11$, $z = 42$, 24 voxels (see Figure 2b), suggesting that the more participants rated a social target as typically human, the less activity in the ACC. This neural region is implicated in cognitive control or conflict resolution (Botvinick, Braver, Barch, Carter, & Cohen, 2001), but more recently, has been active when participants needed to override a prepotent response to endorse sacrificing dehumanized targets (Cikara, Farnsworth, Harris, & Fiske, 2010). This suggests that

estimations of less typical humanity to social targets relate to increased conflict resolution, perhaps because participants are obviously aware that the targets are indeed human beings. This should be considered as another possible psychological mechanism of torture, as implicated in people denying obvious humanity to other people.

Bilateral STS, a component of the social-cognition network, was correlated with rated ease of getting into other people's heads, similarity, and familiarity (see Table 1), suggesting that these ratings rely on the social-cognition neural network.

Finally, ratings of ups and downs in life activated a range of neural regions, including bilateral anterior insula, and visual regions implicated in attention such as Brodmann area 18 in occipital cortex, $t(19) = 4.15$, $p < 5.97E^{-4}$, partial $\eta^2 = 0.48$, at $x = -22$, $y = -88$, $z = 20$, 355 voxels. The variety of modulation with this rating dimension suggests a number of psychological processes engaged during this estimation.

General Discussion

People spontaneously fail to consider another person's mind if that person elicits predominantly disgust, a phenomenon we characterize as dehumanized perception. Perceivers moreover view these targets as less typically human, unfamiliar, dissimilar, unintelligent, inarticulate, cold, incompetent, and having more ups and downs in life; perceivers describe it as more difficult to infer the content of their minds and personality, and perceivers do not use mental-state verbs when describing dehumanized targets' daily life. Specifically, participants spontaneously think about the minds of dehumanized targets less often than the minds of other social targets. Moreover, these human-perception dimensions correlate with parts of the brain implicated in disgust, conflict resolution, and attention, in addition to social-cognition neural regions.

These results provide significant leads for further investigating the dehumanized perception that may underlie the ability to inflict severe harm on other people. Dehumanized perception of extreme outgroups suggests that they are perceived as unlike all other people. Thus, discriminatory or inhumane behaviors may not seem to matter because one fails to consider the person's mental experience (Fiske, Harris, & Cuddy, 2004). Having a mind is a uniquely human trait, suggesting dehumanized others may be treated more like objects in the environment without internal states.

Of course, dehumanization has been studied in social psychology since Allport (1954) described it as the worst kind of prejudice. Theory has suggested that acting beyond societal norms leads to moral exclusion (Bar-Tal, 1989), and out-groups allegedly operate beyond moral rules and values (Opatow, 1990; Staub, 1989). Outgroups are not perceived as experiencing complex human emotions to the same extent as ingroups, a phenomenon termed infra-humanization (Leyens et al., 2001, 2003). Complex human emotions are uniquely human experiences, and this denial reduces targets to the level of automata. Denial of typically human characteristics, such as intelligence or language, reduces targets to the level of animals (Haslam, 2006), a phenomenon observed in African-American perception (Goff, Eberhardt, Williams, & Jackson, 2008). Moreover, dehumanization facilitates behavior generally not reserved for human beings because perceiving a person implies a number of moral rules and norms that govern the social interaction. Therefore, violating these rules should lead to feelings of remorse and guilt unless the victim is recategorized as nonhuman beyond the boundaries of moral protection. For instance, research in this topical issue shows negative relationships between violence and likelihood of developing posttraumatic stress disorder in two separate instances of genocide and mass killings (PTSD; Weierstall, Schalinski, Crombach, Hecker, & Elbert, 2011; Weierstall, Schaal, Schalinski,

Dusingizemungu, & Elbert, in press). By denying a person full humanity, perhaps inhumane behavior like torture and genocide becomes permissible.

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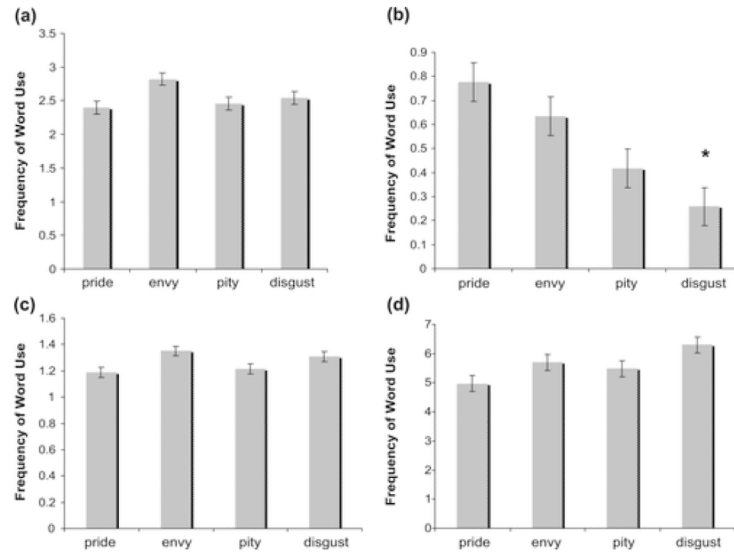


Figure 1. Words used to describe each type of social target: (a) adjectives, (b) mental-state verbs, (c) interpretive-action verbs, (d) descriptive-action verbs. *Notes:* Words of emotion refer to the social targets. * = significant at $p < .05$.

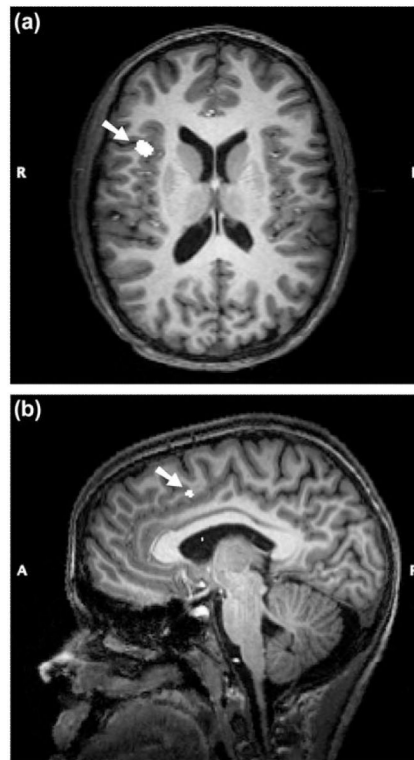


Figure 2. Neural correlates of human-perception dimensions: (a) right anterior insula modulation by trait warmth ratings, (b) anterior cingulate modulation by typical humanity ratings.

Table 1

Neural correlates of human-perception dimensions

Neural region	Peak Talairach coordinates			Voxels	<i>t</i> value	<i>p</i> value	Effect size
	<i>x</i>	<i>y</i>	<i>z</i>				
Warmth							
R. Anterior insula, BA 13	38	13	15	312	-4.31	4.76E ⁻⁴	0.49
Competence							
L. Posterior insula, BA 13	-27	-32	22	54	4.27	5.21E ⁻⁴	0.49
Typically human							
R. Anterior cingulate (ACC), BA 32	5	11	42	24	-4.01	7.69E ⁻⁴	0.46
Ease of getting into their head							
R. Superior temporal gyrus (STS), BA 42	61	-32	21	52	4.00	7.81E ⁻⁴	0.46
L. Parahippocampal gyrus	-28	-14	-10	168	4.06	6.96E ⁻⁴	0.46
Ups and downs in life							
L. Anterior insula	-39	12	-2	142	4.07	6.79E ⁻⁴	0.47
R. Occipital lobe, BA 18	9	-84	-10	931	4.18	5.67E ⁻⁴	0.48
L. Cerebellum, anterior lobe, culmen	-45	-51	-20	5041	4.64	3.26E ⁻⁴	0.53
L. Inferior frontal gyrus, BA 9	-48	0	23	323	4.27	5.14E ⁻⁴	0.49
L. Middle occipital gyrus, BA 18	-22	-88	20	355	4.15	5.97E ⁻⁴	0.48
R. Anterior insula	42	17	0	127	4.05	7.15E ⁻⁴	0.46
L. Precentral gyrus, BA 6	-45	-9	34	205	4.24	5.13E ⁻⁴	0.49
R. Inferior parietal lobule, BA 40	55	-47	36	43	4.00	7.87E ⁻⁴	0.46
L. Supramarginal gyrus, BA 40	-59	-46	29	882	4.24	5.46E ⁻⁴	0.49
Similarity							
L. Superior temporal gyrus (STS), BA 42	-60	-29	8	2677	-4.44	4.02E ⁻⁴	0.51
L. Superior temporal gyrus (STS), BA 38	-53	4	-9	169	-4.04	4.02E ⁻⁴	0.46
R. Brainstem, pons	8	-15	-24	37	-4.10	6.52E ⁻⁴	0.47
Familiarity							
L. Superior temporal gyrus (STS), BA 22	-64	-34	9	88	4.11	6.50E ⁻⁴	0.47