in GWI-HAP will benefit the rehabilitation of veterans with GWI-HAP.

Categories: Medical/Neurological Disorders/Other (Adult)
Keyword 1: neuroimaging: functional connectivity
Keyword 2: chronic pain
Keyword 3: depression
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5 White Matter Tract Shape as a Predictor of PTSD Symptom Severity in Trauma-Exposed Black American Women

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Objective: Machine learning studies of PTSD show promise for identifying neurobiological signatures of this disorder, but studies to date have largely excluded Black American women, who experience disproportionately greater trauma and have relatively higher rates of PTSD. PTSD is characterized by four symptom clusters: trauma reexperiencing, trauma avoidance, hyperarousal, and anhedonia. A prior machine learning study reported successful PTSD symptom cluster severity prediction using functional MRI data but did not examine white matter predictors. White matter microstructural integrity has been related to PTSD presence and symptoms, and unexplored metrics such as estimates of tract shape may provide unique predictive utility. Therefore, this study examines the relationship between white matter tract shape and PTSD symptom cluster severity amongst trauma-exposed Black American women using multiple machine learning models.
Participants and Methods: Participants included 45 Black American women with PTSD (M_{age}=40.4(12.9)) and 89 trauma-exposed controls (M_{age}=39.8(11.6)). Shape and diffusion metrics for the cingulum, corpus callosum, fornix, inferior longitudinal fasciculus, superior longitudinal fasciculus, and uncinate fasciculus were calculated using deterministic tractography. Current symptom severity was calculated using the PTSD Symptom Scales. Input features included tract metrics, questionnaire responses, and age. The following regression models were generated: least absolute shrinkage and selection operator (LASSO), ridge, elastic net, and gaussian process (GPR). Additionally, two forms of latent-scale GPR, one without (lsGPR) and with (sp-lsGPR) node selection via spike and slab priors, were calculated. The performance of regression models was estimated using mean square error (MSE) and R^2.
Results: sp-lsGPR performed at or above other models across all symptom clusters. LASSO models were comparable to sp-lsGPR for avoidance and hyperarousal clusters. Ridge regression and GPR had the weakest performance across clusters. Scores for sp-lsGPR by cluster are as follows: reexperiencing M_{MSE}=0.70(0.17), M_{R2}=0.56(0.13); avoidance M_{MSE}=0.75(0.17), M_{R2}= 0.51(0.13); hyperarousal M_{MSE}=0.57(0.18), M_{R2}=0.66(0.12); anhedonia M_{MSE}=0.74(0.27), M_{R2}=0.57(0.13). The top three ranked posterior inclusion probabilities for white matter tracts across sp-lsGPR models include four sections of the cingulum, three sections of the corpus callosum, the right fornix, the left inferior longitudinal fasciculus, the first segment of the right superior longitudinal fasciculus, and the right uncincate fasciculus. The greatest posterior inclusion probability value for the sp-lsGPR models was the left frontal parahippocampal cingulum for the hyperarousal cluster.
Conclusions: Results support the combined predictive utility of white matter metrics for brain imaging regression models of PTSD. Results also support the use of sp-lsGPR models, which are designed to balance interpretable linear models and highly-flexible non-linear models. The sp-lsGPR model performance was similar across clusters but was relatively better for the hyperarousal cluster. This finding contrasts with prior machine learning work using functional data which was unable to predict hyperarousal scores above chance (M_{R2}=0.06). These diverging findings highlight the importance of examining both functional and structural data in PTSD populations. Differing findings may also be related to sample characteristics as the prior study was conducted in China. Black American

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women and Chinese individuals have unique lived experiences that may differentially impact brain structure and function. Future work should continue to include diverse research samples to account for such experiences.

Categories: Neuroimaging
Keyword 1: post-traumatic stress disorder
Keyword 2: neuroimaging: structural connectivity
Keyword 3: diversity
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6 Why Do Cultures Affect Facial Emotion Perception? – A Systematic Review

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Objective: Most emotion perception assessments were developed in western societies using English terms and Caucasian faces, so the extent to which they are cross-culturally valid is in question. To sort this, understanding the mechanisms of cultural variations is the key. In the past half-century, cross-cultural differences in perceiving facial emotions have been consistently reported and discussed, advancing knowledge to feed theoretical and practical interests. However, as these studies are heterogeneous in the questions asked and methods used, without understanding their association, we cannot provide a clear answer to the simple question: why do people from different cultures perceive facial emotions differently? This limitation represents a bottleneck for adapting western clinical assessments cross-culturally to suit the increasing trend of globalisation in research and testing. To address this issue, we conducted a systematic review aiming to reveal the effect of culture on emotion perception from past cross-cultural studies on healthy people. We expected this review to bridge findings in basic research and clinical application.
Participants and Methods: The systematic review followed the framework outlined in Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). We searched five databases using three groups of keywords. We included all peer-reviewed original studies that 1) conducted cross-cultural comparison in facial emotion perception with healthy adults and 2) used a design that allowed identifying specific mechanisms to explain cultural variations.
The qualitative data synthesis included three steps: 1) categorising eligible studies according to the type of cross-cultural differences they investigated, 2) summarising the findings of each cluster, and 3) summarising the mechanisms revealed by the findings.
Results: We found the 122 eligible articles clustered into five groups that investigated 1) how race and in-group and out-group status affected facial emotion perception; 2) cultural differences in using context to identify facial expressions; 3) cultural differences in emotion conceptualisation and how they affected facial emotion perception; 4) cultural differences in interpreting facial muscle configurations; 5) how culture interacted with the inference making process.
Seven mechanisms underlying cultural variations in facial emotion perception were revealed. These are facial emotion templates, emotion conceptualisation, in/out-group differentiation, information surveying strategies, belief that expressers are independent agents, reliance on the face and other emotion expressing channels, and stereotypes. The relative importance of these factors may depend on the cultures chosen to compare and the situational settings that affect how they work together in real life.
Conclusions: This review, for the first time, systematically addresses the mechanisms underlying cross-cultural differences in facial emotion perception. Besides advancing knowledge about this rapidly growing area, it guides what needs to be considered when designing new tests, adapting existing tests, and assessing the risk of bias brought about by cross-cultural issues.

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Keyword 1: cross-cultural issues
Keyword 2: facial affect
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