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| **Preprocessing (using fMRIPrep v1.0.11)** |
| **T1w Anatomical Preprocessing**   * **Intensity non-uniformity correction**   + Performed using N4BiasFieldCorrection v2.1.0. * **Skull stripping**   + Done via antsBrainExtraction.sh v2.1.0 using OASIS template. * **Spatial normalization**   + Warped to ICBM 152 Nonlinear Asymmetrical template (2009c) using antsRegistration (ANTs v2.1.0).   **Functional Preprocessing**   * **Motion correction**   + Performed using mcflirt (FSL v5.0.9). * **Fieldmap-less distortion correction**   + Co-register functional to T1w with intensity inversion (Wang et al., 2017), constrained with average fieldmap template (Treiber et al., 2016), via antsRegistration. * **BOLD-to-T1w co-registration**   + Using boundary-based registration (Greve & Fischl, 2009), implemented via FSL’s flirt with 6 degrees of freedom. * **Combined transformation application**   + Motion correction, distortion correction, BOLD-to-T1w, and T1w-to-MNI transformations concatenated and applied in one step using antsApplyTransforms, with Lanczos interpolation. * **Framewise displacement calculation**   + Done with Nipype’s implementation (Power et al., 2014). * **Spatial smoothing**   + Adaptive smoothing using AFNI’s 3dBlurToFWHM to reach 7 mm global smoothness. * **Confound regression**   + Using AFNI’s 3dTproject:   + Regressors:     1. 6 motion parameters + derivatives     2. 2nd-order polynomial detrending     3. High-pass filter (cutoff: 140 sec)   The subsequent steps were included in: <https://github.com/azadbood/sixthsense>   * **De-spiking** * **Z-scoring**   + Time series z-scored across the whole movie run. |
| **Multivariate Pattern Analysis (MVPA):**  **Intersubject Pattern Similarity (pISC) For Encoding Phase** |
| * **Scene-wise averaging**   + fMRI time series averaged within each critical scene, per ROI, per subject. * **Pattern similarity (encoding)**   + For each scene:     1. Twist subject’s ROI pattern correlated (Pearson’s r) with spoiled group average for same scene.     2. Same for twist vs no-twist. * **Fisher transformation**   + All correlation values were Fisher-transformed for statistical analyses. * **Difference score calculation**   + For each ROI: twist–spoiled vs twist–no-twist difference computed per subject. * **Non-parametric statistical testing**   + One-tailed paired t-test, sign-flipping with 1000 permutations.   + FDR-corrected (p < .05) for DMN ROIs. |