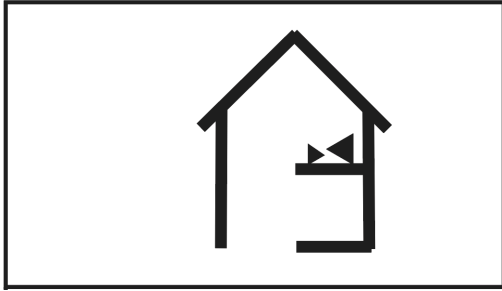


# Supplementary information

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## 1. Movie



**Movie 1.** Thirty-six subjects were scanned in fMRI while watching a 7-minute movie that depicted a complex narrative using the movement of simple geometric shapes. While the movie did not include dialogue, it was accompanied by a piano soundtrack.

## 2. Audio story text

A young boy, carrying a ball, goes to an empty playground to play by himself. The boy kicks the ball and then dashes after it. He lines up his shot and kicks the ball again. The boy catches up to the ball and bounces it off the playground's fences several times, passing it to himself. As he circles the ball, lining up his next shot, his father shows up and calls for him. The boy takes one final kick at the ball before leaving the playground to meet his waiting father. The boy and his father exchange a few words and leave.

The boy and his father live in a modest, two story home with a pointed roof. After arriving home, they have a short chat, and the boy turns and climbs the stairs to his second floor bedroom. His father follows, gives his son a goodnight kiss and tucks him in for the night. While the boy falls asleep, his father walks back downstairs to his bedroom on the first floor, climbs into bed, and quickly falls asleep.

Upstairs, the boy begins to dream. The ceiling opens up and he floats into the sky, along with a huge bird. High above mountains, the boy can fly! The giant bird splits into two smaller birds, which soar across the sky with the boy. The two birds become four birds. The boy plays with the birds, but then the flock gangs up on him and start chasing him. He tries to fly away but cannot escape! Thankfully, the dream ends, and the birds disappear. The boy sleeps peacefully for the rest of the night.

In the morning, the boy's father climbs the stairs to his son's bedroom and wakes him up. The boy follows his father back down the stairs to the first floor of their home. They have a brief conversation before the boy heads out for the day. The day passes.

The father waits for his son to return home. When he does, the two talk briefly and the boy climbs into bed as does his father downstairs. Both fall right asleep. Shortly after falling asleep, the boy starts to have the bird dream again. The four birds from the previous night are back. They surround him, preventing him from escaping no matter which direction he turns. The birds transform into a giant monster with two long arms and two wobbly legs. The monster swats at the boy! He misses, and tries again. Frightened, the boy flies up and over the monster, evading its grasp. The monster scrunches into a little ball. It pounces, lunging at the boy! After the boy dodges this attack the nightmare finally ends. The boy sleeps peacefully for the rest of the night.

In the morning, the boy's dad wakes up, walks to the stairs, and shouts for his son to come down. The boy jumps up, and goes down the stairs. After a brief good morning, the boy again heads out for the day, and the day passes. At the end of the day, the boy returns home, greets his father quickly and then goes straight upstairs to his bedroom. The boy climbs into bed, as does his father downstairs. Both eventually fall asleep.

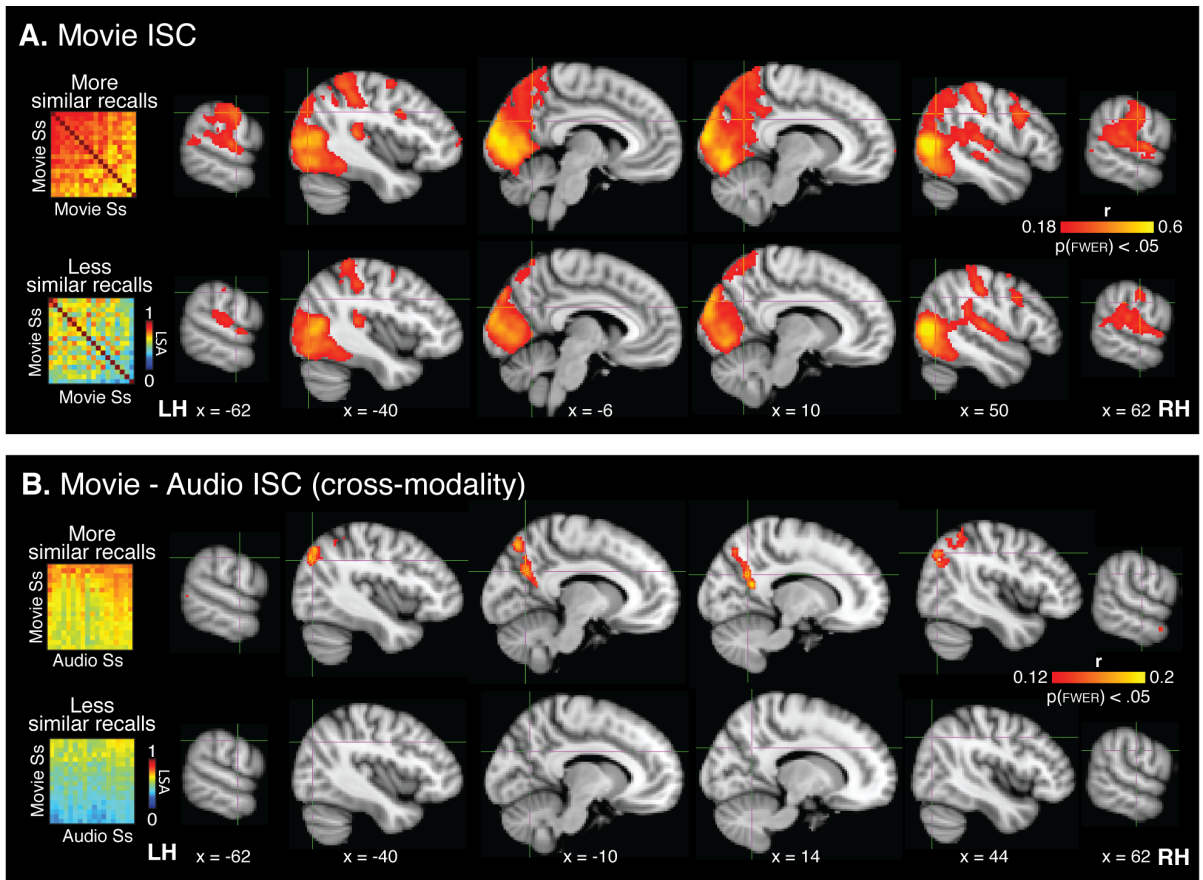
For the third night in a row, the boy begins to dream. The towering monster from the previous dream appears again, slowly following the boy and reaching for him with one arm. The boy stays out of his reach and hovers uncertainly around the monster's feet. Suddenly, he is joined by another boy. The boys speak frantically as the monster reaches. The boys fly over the monster, which is still clawing at them. The boys make a desperate plan, and the new boy speeds away. He quickly returns with a ball. The boys put the ball in a slingshot. At the last minute, they let it go, shooting the ball into the monster, which breaks into a heap.

Excited, the boy swoops over the heap until he notices that the other boy is gone. He goes looking for his new friend, but can't find him. He checks under the rubble for his friend. He finds the ball, but not the other boy. His friend is nowhere to be seen. Disappointed, the boy abandons the ball and slowly leaves the dream. He sleeps the rest of the night.

In the morning, the boy's father wakes up and calls for him from the bottom of the stairs. The boy wakes up, gets out of bed, and walks downstairs. Father and son exchange a few words, and the boy heads out. The boy walks to the playground, where his ball is still sitting at the far end of the yard. The boy enters the playground, closing the gate after himself. He forlornly walks to the single ball. He slowly and unenthusiastic kicks the ball halfway down the yard.

As he kicks the ball again, his mysterious friend from the dream appears and sneaks towards the playground. He checks that his friend is there. He quietly opens the gate. He sneaks up on the boy, who still doesn't see him. He taps the boy on the shoulder. The boy whirls around! The two friends talk back and forth. The boy races to get his ball as his friend gets in position. The boy kicks the ball hard to his friend, who quickly passes it back, playing together in real life just as they had in the dream.

### 3. SI Figure 1

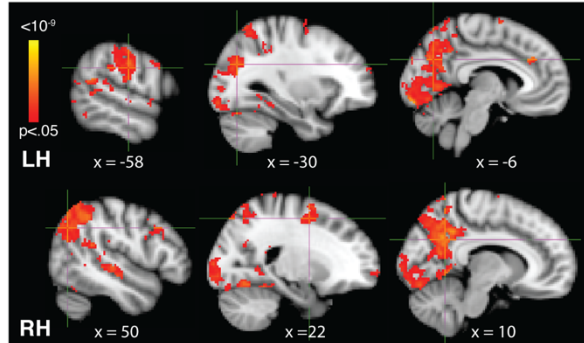


**SI Figure 1.** ISC in recall similarity groups. **(A).** Movie subjects with more similar recalls (top row) showed widespread neural synchrony extending from early sensory areas to default mode network areas. Movie subjects with less similar recalls (bottom row) showed less widespread neural synchrony. **(B).** Movie and Audio subjects who had similar interpretations of the narrative showed shared neural responses in linguistic regions, bilateral angular gyrus, and posterior medial cortex (top row). When Movie and Audio subjects did not share interpretations, there was little shared neural responses throughout the brain (bottom row).  $p < .05$ , FWER corrected.

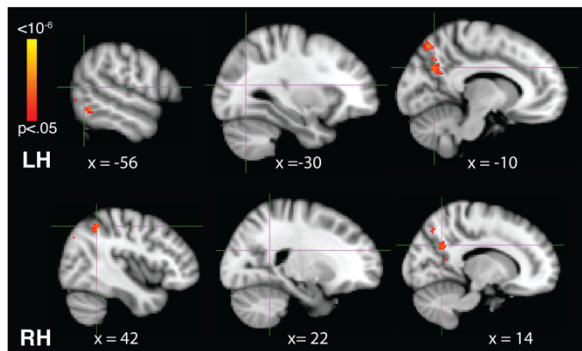
## 4. SI Figure 2

### ISC difference between groups (motion regressed out)

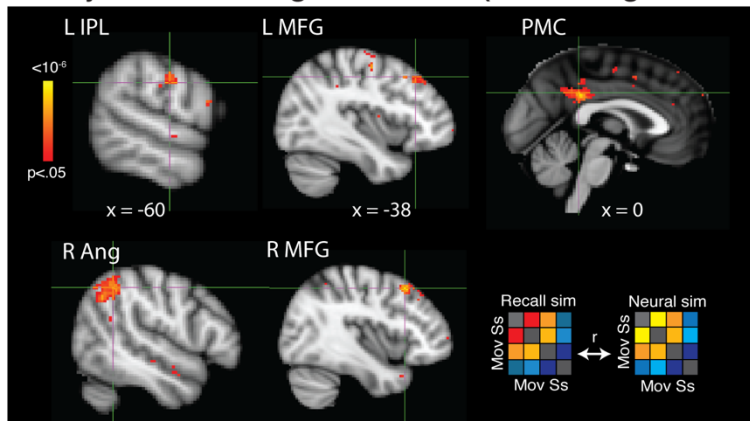
#### A. Larger ISC among Movie subjects with similar recalls



#### B. Larger ISC between Movie and Audio subs with similar recalls

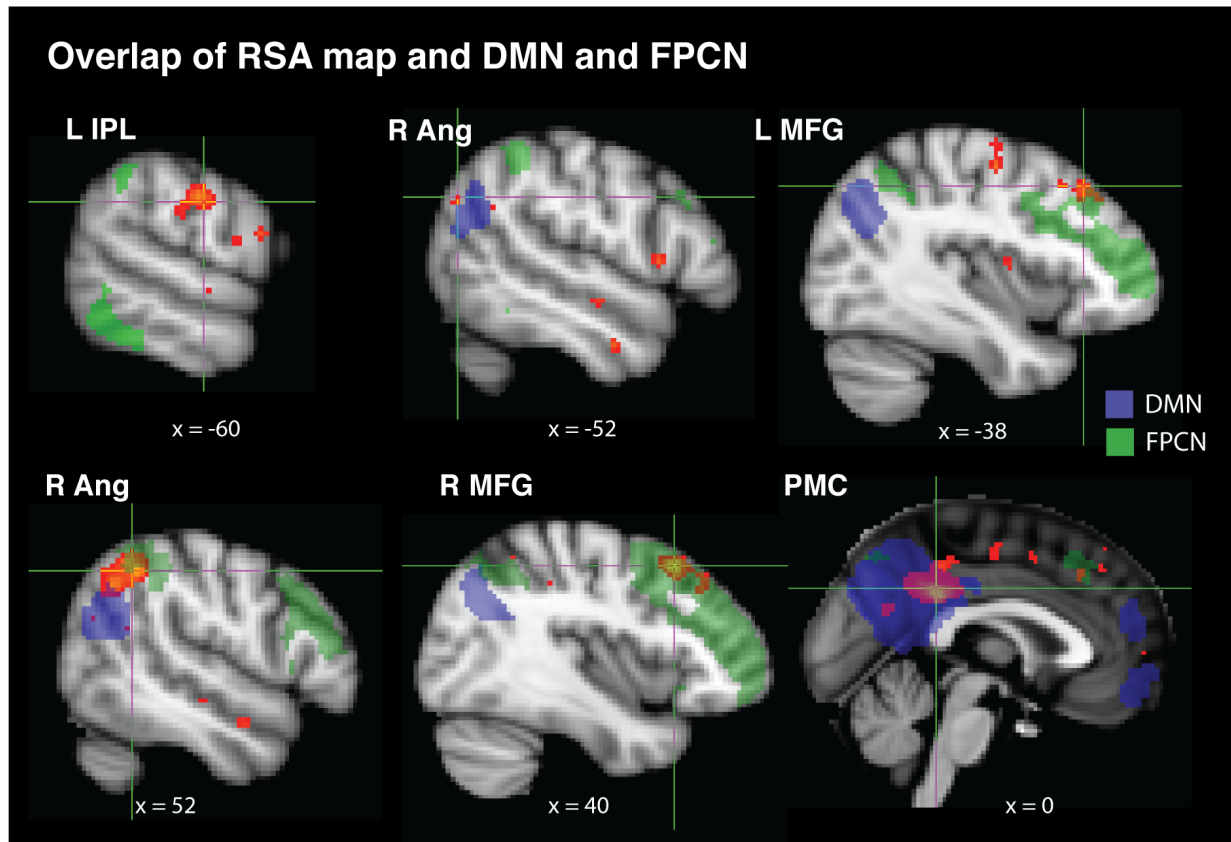


#### C. Intersubject RSA among Movie subs (motion regressed out)



**SI Figure 2.** ISC and intersubject RSA on motion residuals. To confirm that our results were not confounded by correlated motion across subjects, we regressed out motion estimates from the neural responses of each subject and repeated the analyses on the residuals of the regression. We found largely the same results as in the original analysis for both ISC results (A,B) and intersubject RSA (C).

### SI Figure 3



**SI Figure 3.** Overlap of intersubject RSA results and other networks. While the results of the intersubject RSA overlap significantly with regions of the Default Mode Network (blue, DMN), we also see substantial overlap with the fronto-parietal control network (green, FPCN).