NEURAL EVIDENCE FOR A CONTEXT-CHANGE ACCOUNT OF LIST-METHOD DIRECTED FORGETTING



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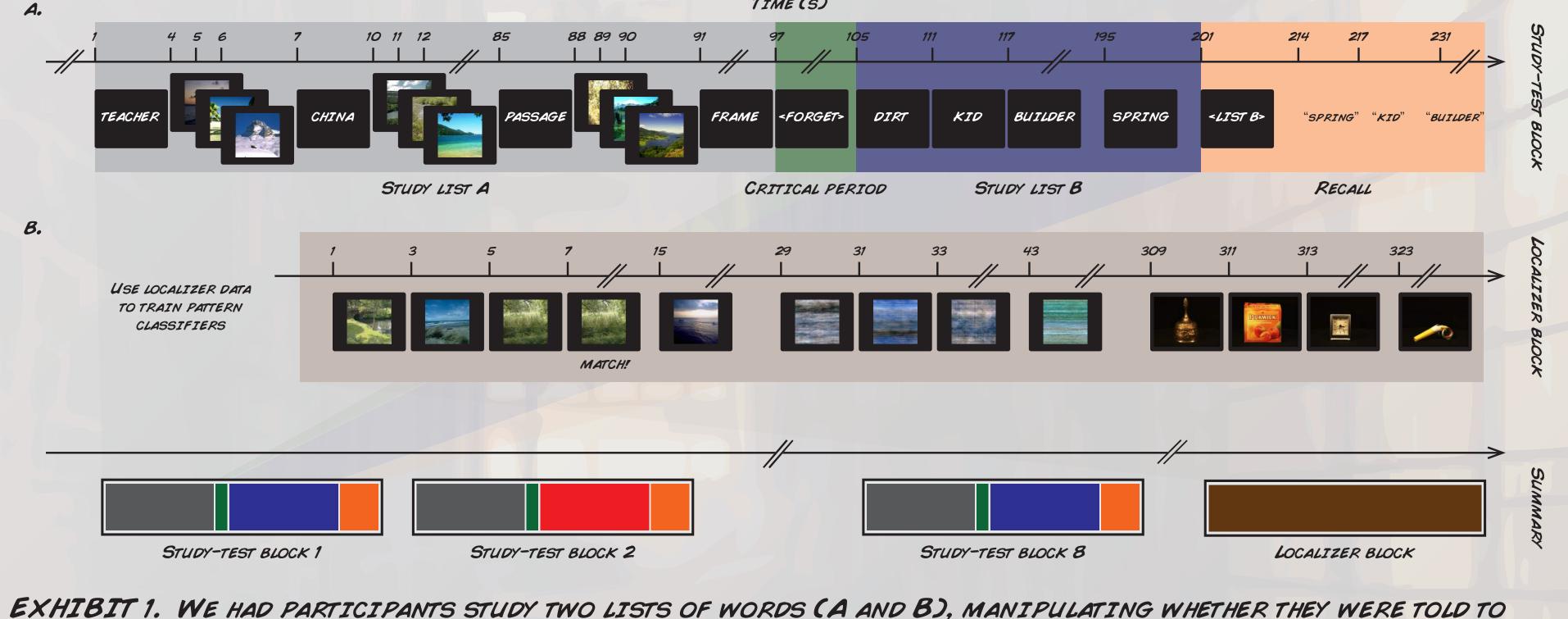




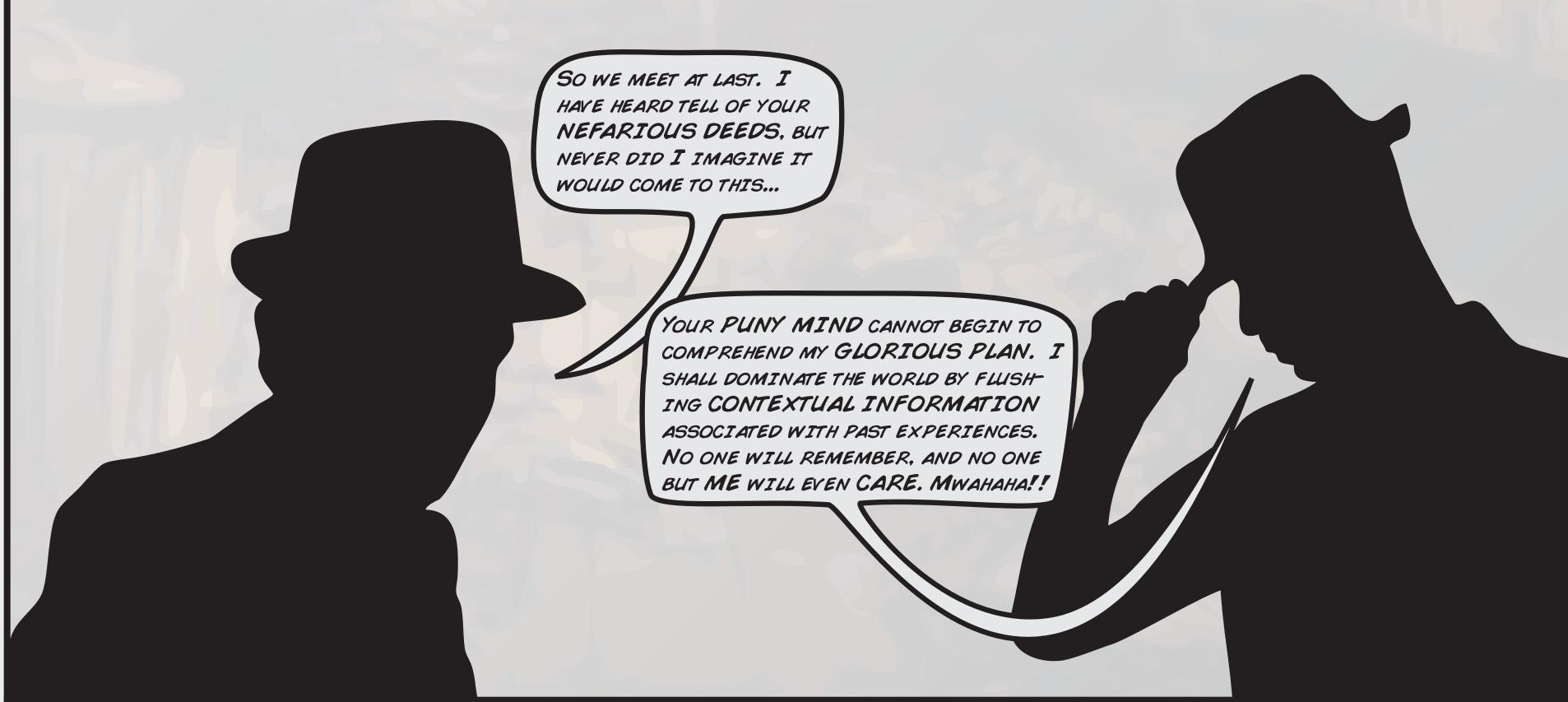


INTRODUCTION & METHODS

- THE MENTAL CONTEXT IN WHICH WE EXPERIENCE AN EVENT PLAYS A FUNDA-MENTAL ROLE IN HOW WE ORGANIZE OUR MEMORIES AND, IN TURN, HOW WE RE-TRIEVE THOSE MEMORIES LATER.
- PROCESSES THAT ALTER OUR REPRESENTATIONS OF MENTAL CONTEXT CAN EN-HANCE OR DIMINISH OUR CAPACITY TO RETRIEVE PARTICULAR MEMORIES.
- WE DESIGNED AN FMRI EXPERIMENT TO TEST THE HYPOTHESIS THAT PEOPLE CAN INTENTIONALLY FORGET PREVIOUSLY EXPERIENCED EVENTS BY "FLUSHING OUT" THE ASSOCIATED CONTEXTUAL INFORMATION.
- WE USED MY PA-PREDICTED SCENE ACTIVATIONS TO INFER HOW MUCH LIST A CONTEXTUAL INFORMATION WAS PRESENT IN PARTICIPANTS' THOUGHTS THROUGHT OUT THE EXPERIMENT.



FORGET THE LIST A PRIOR TO STUDYING LIST B. WE ALSO HAD PARTICIPANTS PASSIVELY VIEW IMAGES OF OUTDOOR SCENES PRESENTED BETWEEN THE LIST A WORDS: WE HOPED THESE WOULD BE INTEGRATED INTO LIST A CONTEXTUAL REPRESENTATIONS.



IN SEARCH OF HARD EVIDENCE, TEAM DF TAKES TO THE SEEDY BACK ALLEYS OF PRINCETON, NJ. A SHADOWY FIGURE, KNOWN ONLY AS THE FLUSHER APPEARS SUDDENLY, CLAIMING TO HAVE SHOCKING FIRST-HAND KNOWLEDGE OF HOW WE FORGET ...

- PARTICIPANTS REMEMBER FEWER LIST A WORDS AND MORE LIST B WORDS FOLLOW-ING A FORGET (VS. REMEMBER)

- SCENE ACTIVATIONS (REFLECTING LIST A CONTEXT) DECREASE MORE FOLLOWING A FORGET (VS. REMEMBER) CUE.
- THE DECREASE IN SCENE-RELATED ACTIVITY FOLLOWING A FORGET CUE PREDICTS PARTICI-PANTS' ABILITIES TO RECALL THE LIST A WORDS.

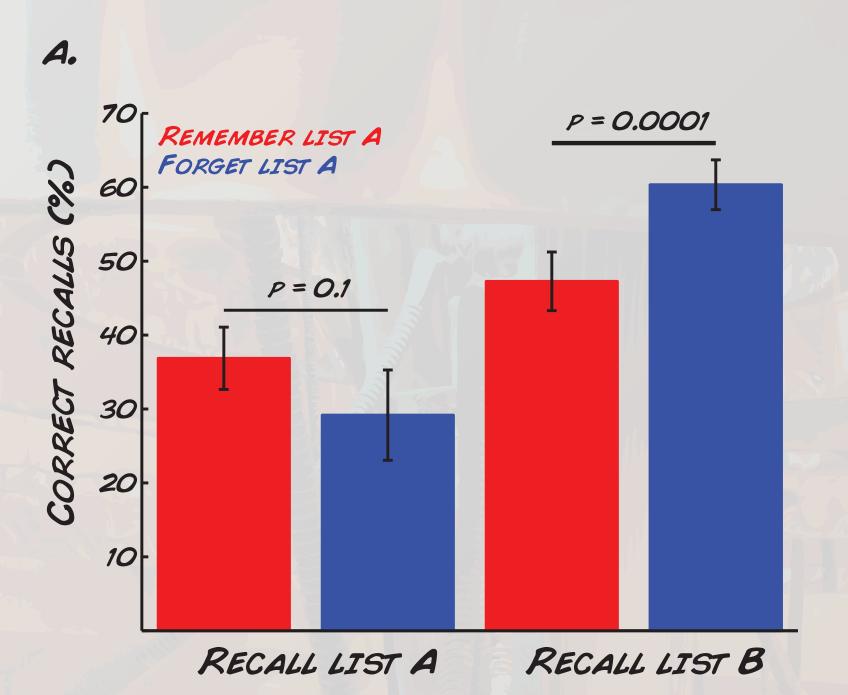
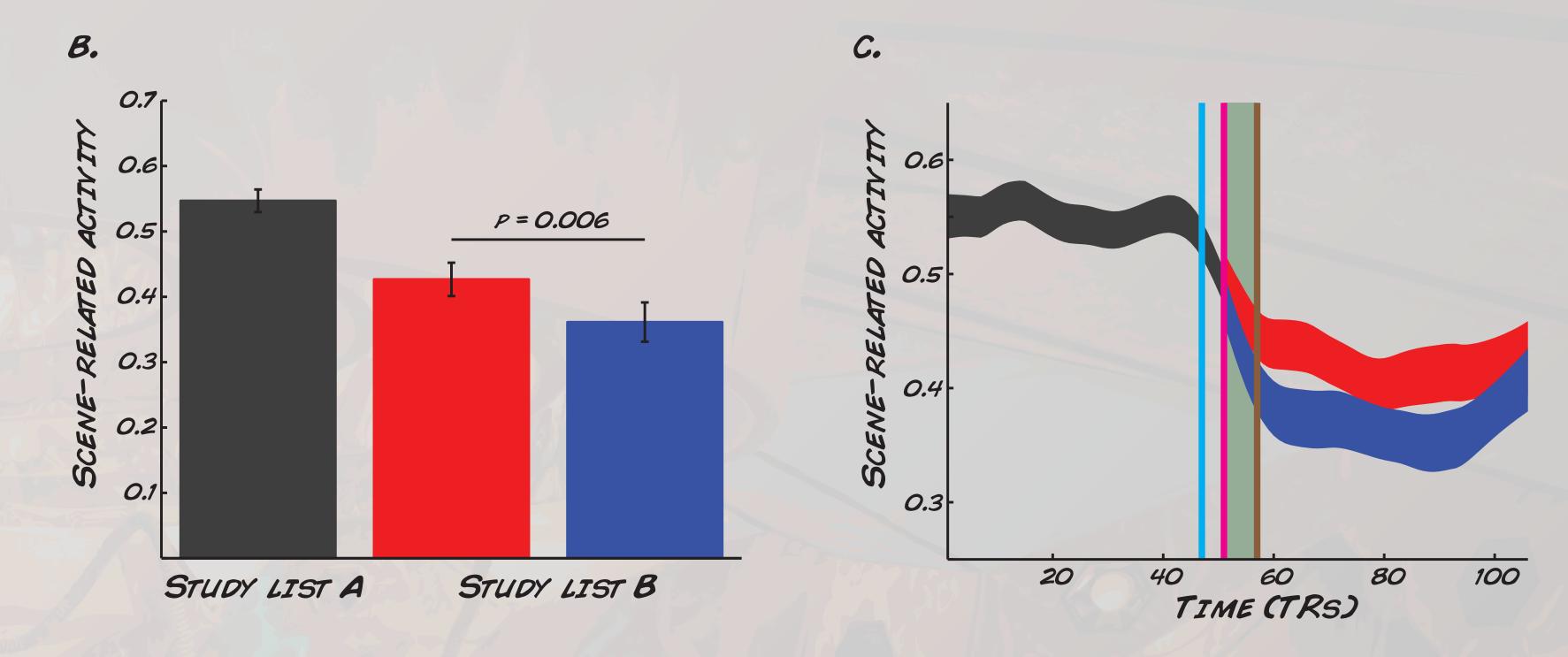
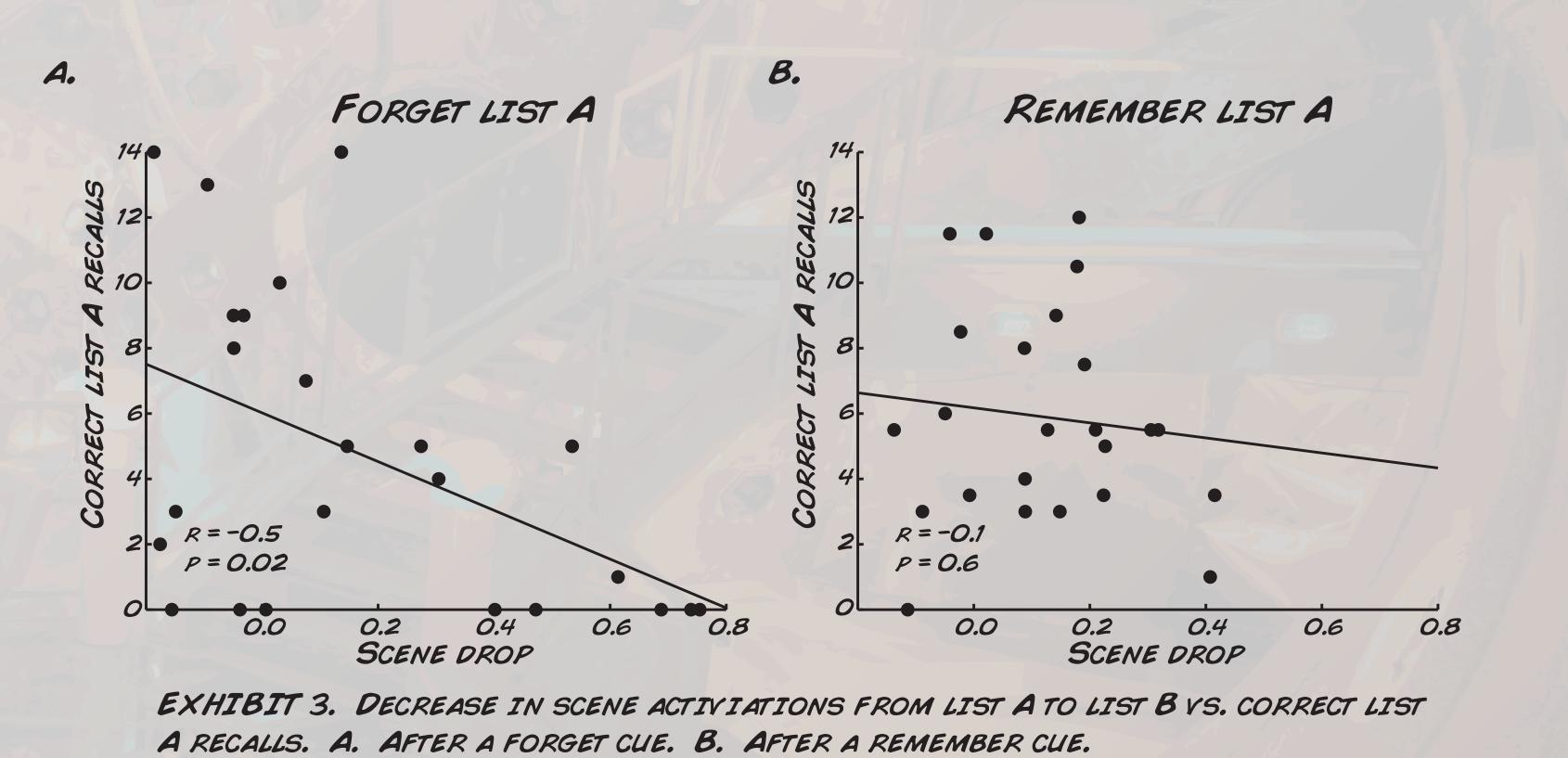


EXHIBIT 2. A. RECALL PERFORMANCE. B. SCENE-RELATED NEURAL ACTIVITY. C. NEURAL TIMECOURSE.





USING THE LATEST MIND-READING TECHNOLOGY, TEAM OF PROBES THE BRAINS OF 25 UNSUSPECTING VICTIMS. THE FLUSHER'S CLAIMS APPEAR TO CHECK OUT, BUT WHERE DOES IT ALL HAPPEN IN THE BRAIN?!?



- THESE REGIONS ARE SIMILAR TO THOSE INVOLVED IN FLUSHING OUT "SITUATION MODELS" WHEN WE TRANSITION FROM ONE EVENT TO ANOTHER.
- WE ALSO IDENTIFIED REGIONS THAT RESPONDED DIFFERENTLY DURING LIST B FOLLOWING FORGET VS. REMEMBER CUES.

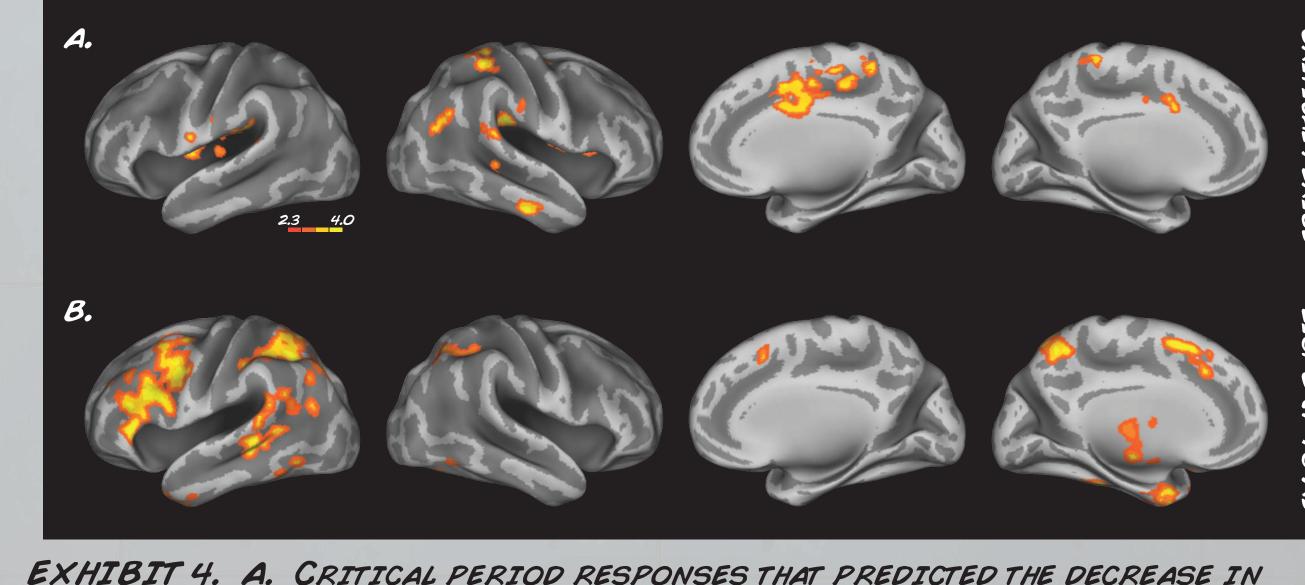


EXHIBIT 4. A. CRITICAL PERIOD RESPONSES THAT PREDICTED THE DECREASE IN LOWING FORGET VS. REMEMBER CUES.

SCENE ACTIVATIONS FROM LIST A TO LIST B. B. LIST B RESPONSES THAT DIFFERED FOL-OU FOUND ME! BUT NO MATTER: YOU CANNOT HOPE TO ESCAPE WITH YOUR SO IT WAS YOU ALL MEMORIES INTACT. ONCE YOU TRANSI-TION TO THE NEXT EVENT, OR EVEN WA THROUGH A DOORWAY, ANY GLIN MER OF ME WILL FADE FROM YOU

OVER MONTHS OF CAREFUL INVESTIGATION, TEAM DF BEGINS TO UNCOVER A TERRIBLE TRUTH. AT LONG LAST, THE FLUSHER'S IDENTITY IS REVEALED!

INTERPRETATIONS & CONCLUSIONS

- OUR WORK HIGHLIGHTS THE FUNDAMENTAL ROLE THAT CONTEXTUAL INFORMATION PLAYS IN OUR ABILITY TO ORGANIZE AND RETRIEVE INFORMATION PERTAINING TO PREVIOUS EXPERIENCES.
- WE SHOW THAT ONE TOOL WE USE TO FORGET INFORMATION ABOUT OUR RECENT PAST IS TO FLUSH OUT CONTEXTUAL INFORMATION AS-SOCIATED WITH THOSE EXPERIENCES.

ANOTHER CASE SOLVED. WHAT ADVENTURES LIE AHEAD FOR THESE BRAIN SLEUTHS? WHAT OTHER DEEP MYSTERIES OF THE MIND AWAIT DISCOVERY? FIND OUT MORE AT WWW.PRINCETON.EDU/ MANNING3...