Figure 3.1. Heuristic representation of the three frontal regions most consistently implicated in episodic memory encoding. Two separate left frontal regions including dorsal (posterior) and ventral (anterior) regions are plotted (top lateral view of brain). The third region is located in the right dorsal (posterior) frontal cortex (bottom lateral view of brain). Importantly, these regions dissociate functionally across encoding paradigms. One dissociation is shown by plotting the response over an encoding block for each region, separately for word- and face-encoding conditions. Each time course (in seconds) shows the evolving fMRI signal over a 40s encoding epoch followed by a 24s control period (encoding epoch ends and control period begins at the vertical line in each plot). Data were averaged over 272 separate encoding epochs. FACE and WORD time course data are plotted separately. Three important points are worth noting: (1) there is increased involvement for WORD encoding in the left frontal regions and for FACE encoding in the right frontal regions; (2) within the left frontal regions, the ventral (anterior) region is most selective for WORD encoding; and (3) for those regions showing little or no sustained responses (e.g. the WORD-encoding condition in the right frontal region), there is still none the less a transient increase at the beginning and end of the epoch, perhaps reflecting an initial recruitment of the region. © Psychology Press 2002.
Figure 4.3. Results from a rapid presentation event-related fMRI study of episodic encoding and retrieval (Ranganath et al., 2000). (A) Examples of study and test stimuli and appropriate responses for each test condition. (B) Voxels were characterised according to whether they were activated reliably during encoding trials (blue), retrieval trials (yellow), or both (green). Bilateral regions in anterior and posterior inferior frontal gyri (BA44, BA45, and BA47), and right superior frontal gyrus (BA9) were active during both trial types. (C) The circled region in the left anterior prefrontal cortex was significantly more active during specific test trials than during general test trials. To the right, a bar graph shows response amplitudes within this region in response to old and new objects in each test condition. Activation in the left anterior hippocampus (not shown) exhibited a similar pattern, suggesting that interactions between anterior prefrontal and hippocampal regions were crucial for the monitoring and evaluation of specific memory characteristics in the specific test. Figure adapted from Ranganath, Johnson, & D'Esposito (2000). © Psychology Press 2002.