As humans, we can mentally dissociate ourselves from the present to recall the past, and we can also plan for our future. The mental time travel hypothesis makes two claims. The first is that these two abilities are intimately linked; the second is that both of these abilities are unique to humans. I shall argue that while there is good evidence for the first claim, the second is more controversial. Studies on the behaviour of food-caching western scrub-jays question this latter assumption, however. In terms of retrospective cognition, these birds remember the ‘what, where and when’ of specific past caching episodes, they keep track of how long ago they cached different types of perishable foods that decay at different rates, and also remember whether another individual was present at the time of caching, and if so, which bird was watching when. Recent work demonstrates that the jays also make provision for a future need, caching more food in places in which they will not be given breakfast the next morning than in places where they will be receive breakfast the next morning even though there is plenty of food available to them when they cache the food. Taken together these results challenge the mental time travel hypothesis by showing that some elements of both retrospective and prospective mental time travel appear not to be uniquely human, ones that have implications for our understanding of the evolution and development of this cognitive ability.