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Other	N	

Comments

Distribution Required:	
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Reports Coordinator	Y
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Project File	Y

Judgments of Learning and Aging: A Dual-Process Approach

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Summary:

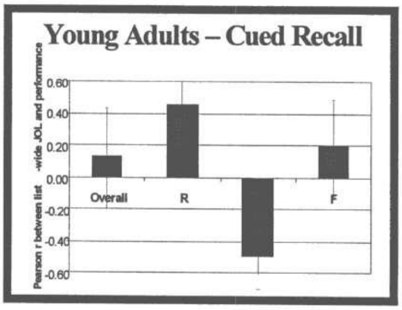
We examined age-related changes in metacognitive monitoring, specifically Judgments of Learning (JOLs). JOLs refer to a person's assessment of whether a studied item or event will be remembered at a later time. Although there is evidence that people have some access to how well they have mastered particular materials, experiments asking participants to make immediate JOLs have found only small to moderate correlations between such JOLs and later performance (e.g., Nelson & Dunlosky, 1991). Moreover, research on age effects is mixed, with some researchers finding equivalent JOL/performance correlations for young and old (e.g., Connor et al., 1997; Dunlosky & Hertzog, 1997; Dunlosky & Hertzog, 2001), and others finding lower correlations for older adults (Dunlosky & Connor, 1997; Murphy et al., 1987).

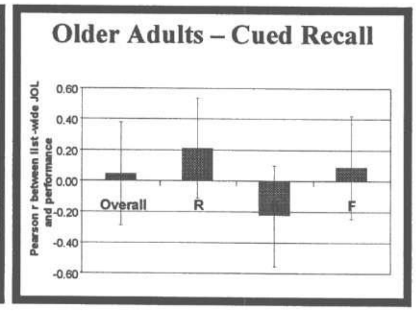
Our experiments were designed to evaluate the possibility that the low level of JOL/performance relations, and the mixed results with respect to aging, are due to a mismatch between the information that is used to make JOLs at encoding and those that actually drive later test performance. Both younger adults (aged 18 to 24) and older adults (aged 65 to 80) were shown lists of 80 five-letter words (e.g., truck, apple, delay, scent) and were asked to rate how likely they believed they were to remember each word during a later recognition or cued-recall test on a scale from 0 to 100 ["0" being "I am absolutely certain I will not remember this word on the late test" and "100" being "I am absolutely certain I will remember this word on the later test"]. The memory of these participants was then tested using either a recognition or a cued-recall task and test performance was separated into its component processes using a traditional Remember-Know procedure (Tulving, 1985). Participants were instructed to respond "Remember" when they had a clear, detailed memory for a word's earlier presentation, to judge "Know" if a word felt familiar but they did not clearly remember seeing on the earlier list, and to judge "No Memory" if they didn't think the word was on the earlier list. We also calculated a familiarity estimate that measures the proportion of trials relying on familiarity assuming an independence model.

Dual-process models of memory (e.g., Jacoby & Dallas, 1981) suggest that memory performance for both recognition and recall tasks reflects both controlled and automatic processes, and that individuals likely have conscious access only to the controlled processes. Thus, JOLs were expected to show relatively high correlations with controlled processes (i.e., Remember judgments), but small correlations with automatic processes (i.e., Know and Familiarity judgments).

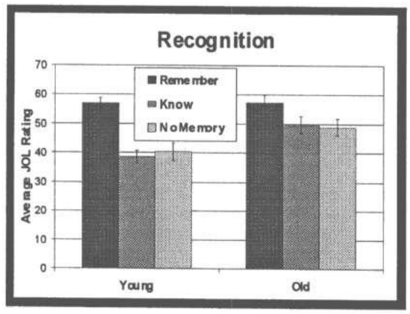
The research produced two major findings in support of the above predictions, although the evidence for the above dual-process predictions is most clearly seen with the younger adults.

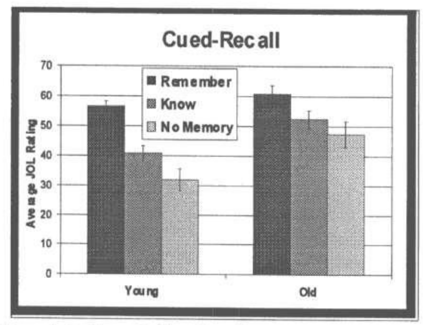
Looking at the relationship of each individual's mean JOL for the list and the mean accuracy of their Remember (R) and Know (K) judgments, we found that young adults' mean JOLs for the list for both recognition and cued recall were correlated positively with their mean Remember (R) judgments and negatively with mean Know (K) judgments, but not with Overall judgments or Familiarity (F) estimates. Although older adults demonstrated the same general pattern, none of the correlations for this group were significant (see adjacent figures for sample data from the cued-recall task).



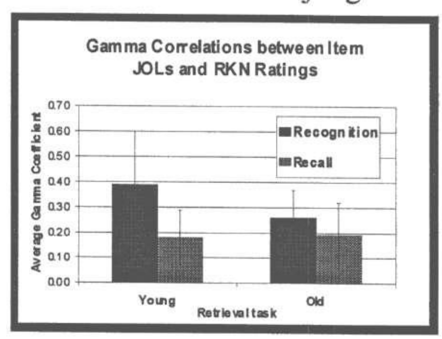


To examine JOL accuracy at the item-level, we sorted item-by-item JOLs into sub-groups, based on the memory ratings made at test (i.e., R, K, or N), and then compared the magnitude of the JOLs for the different sub-groups. We found that the average JOL rating given to items eventually rated as "Recollect" was significantly higher than the average JOL ratings given to items eventually classified as "Familiar" or "No Memory". This pattern of results obtained for both age groups and both tests (see adjacent figures for corresponding recognition and cued recall data).





As well, gamma correlations were computed between item-level JOLs and RK judgments for each individual. There was a main effect of both Test (recognition > recall) and Age (young > old). There was also a significant Test x Age interaction with young adults in the recognition group performing significantly better than all other groups. This suggests that younger adults were generally more accurate than older adults, and that both groups were more accurate for the recognition test, perhaps because of the reinstantiation of the study word.



These findings begin to help explain why prior research, which has not separated controlled and automatic influences, has obtained relatively low correlations with JOLs. We only have conscious access at study to some of the things that contribute to eventual memory performance. Consistent with previous findings (Cohen & Faulkner, 1986; Maylor, 1990), these data also suggest that older adults may be less able to access the conscious details from encoding associated with recollective experiences in young adults. Thus, the evidence used by older adults in making R judgments may be weaker.
There is also evidence that familiarity may be contaminating the R judgments of older adults, especially in the cued-recall task. If, in fact, older adults are more likely to treat F as R at test, their JOLs (which we argue should only be related to relatively pure R judgments) would be less accurate. We are currently planning follow-up studies to more closely examine issues surrounding the relationship between JOLs and Remember-Know judgments for older adults.

Budget:

Awarded $1500

Participant Payment: $1475.00

72 individuals x $20.00 = $1440.00
1 individual x $30.00 = $30.00 [Pilot participant for next experiment]
1 individual x $5.00 = $5.00 [Payment for public transportation]