Cross-correlation Analyses Assessing Age-Related Slowing in Event Segmentation

Because older adults show slowing on a wide range of cognitive tasks, one possibility is that their segmentation responses would be systematically later than those of younger adults. To test this, we computed cross-correlations between the segmentation of the young and older adults' segmentation judgments. For each age group, movie, and grain, we estimated the probability density of segmentation throughout the movie using gaussian kernel density estimation (100ms bandwidth). Then, using a 0.5s lag increment, we computed cross-correlations between young and older groups and extracted the lag at which the correlation was maximal. Lags greater than zero indicate that older adults responded later than young adults, lags less than zero indicate that older adults responded earlier than young adults, and lags of zero are most consistent with a lack of systematic differences in the latency of segmentation. Figure S1 shows the distribution of cross-correlations across 100 time lags (-25s to 25s). As can be seen in the figure, the peak of each distribution is in a window around lag 0. To illustrate at a finer resolution, table S1 lists the cross-correlation coefficients from -2s to 2s, rounded to three decimal places, with the maximal correlations in **bold**. As can be seen in the Table, all of the correlations near lag 0 are similar to each other in magnitude, with some adjacent lags having identical correlations (e.g., laundry-coarse at 0.5s and 1s lag), and some differences only .001 apart (e.g., laundry-fine at 0.5 and 1s lag). Thus, there is little evidence that one group's segmentation is shifted relative to the other group. For tent-coarse, the maximal cross-correlation is at lag 0, for tent-fine the maximal cross-correlation is at a lag of 0.5s, for laundry-coarse the maximal correlation is at both a lag of 0.5s and 1s, for laundry-fine the maximal correlation is at a lag of 1s, for window box-coarse the max correlation is at both a lag of 0.5s and 1s, and for window box-fine the max correlation is at a lag of 1s. However, compared to a lag of 0, the

largest difference in coefficient magnitude to a max is .012 (window box-fine), with the rest being between .002 and .01.

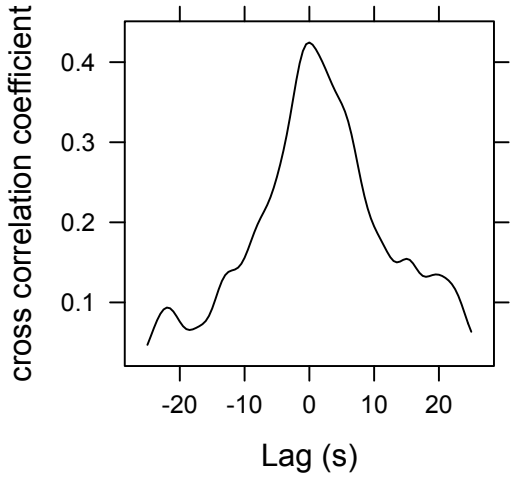
In short, the cross-correlation sequences show weak evidence that older adults' segmentation is slightly later than younger adults' segmentation, being most consistent with lags between zero and one second. Such small differences would not have substantial effects on the analyses reported in this manuscript.

Table S1

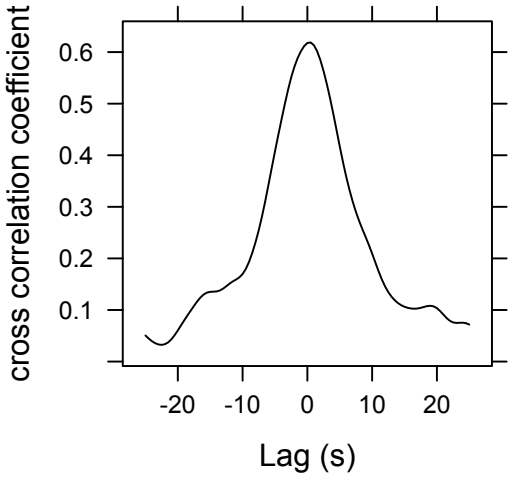
Cross-correlation coefficients between young and older adults by movie and grain.

		Lag								
Movie	Grain	-2s	-1.5s	-1s	-0.5s	0s	0.5s	1s	1.5s	2s
Tent	Coarse	.378	.399	.414	.422	**.425**	.422	.416	.409	.400
Tent	Fine	.289	.319	.344	.361	.371	**.373**	.370	.363	.353
Laundry	Coarse	.572	.588	.602	.612	**.618**	**.618**	.613	.602	.585
Laundry	Fine	.407	.430	.452	.470	.485	.494	**.495**	.488	.474
Window box	Coarse	.288	.299	.310	.320	.328	**.334**	**.334**	.329	.317
Window box	Fine	.284	.304	.323	.340	.353	.361	**.365**	.363	.357

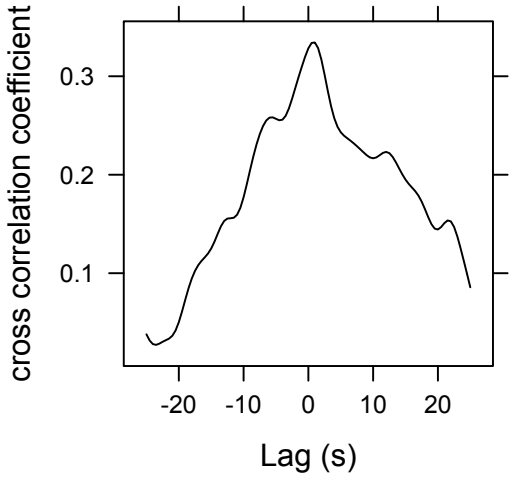
Tent-Coarse



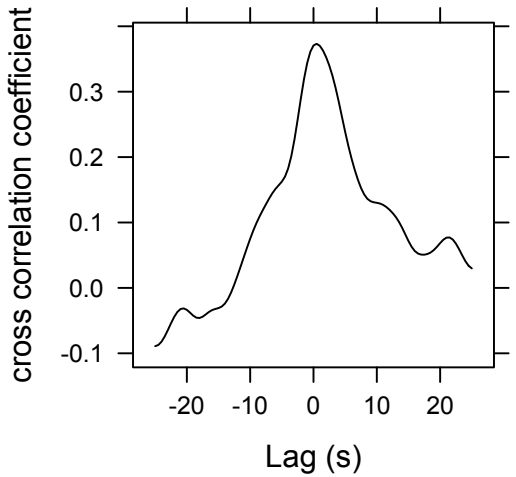
Laundry-Coarse



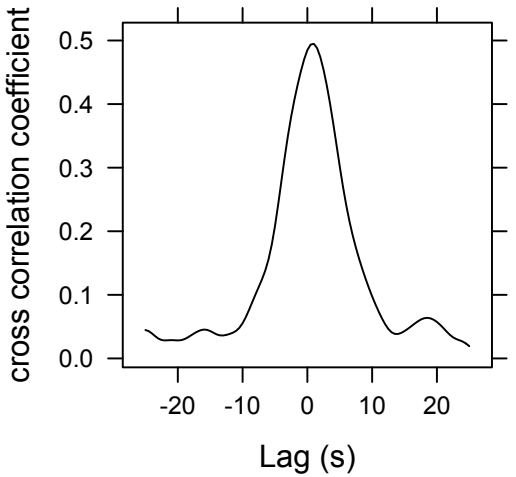
Window box-Coarse



Tent-Fine



Laundry-Fine



Window box-Fine

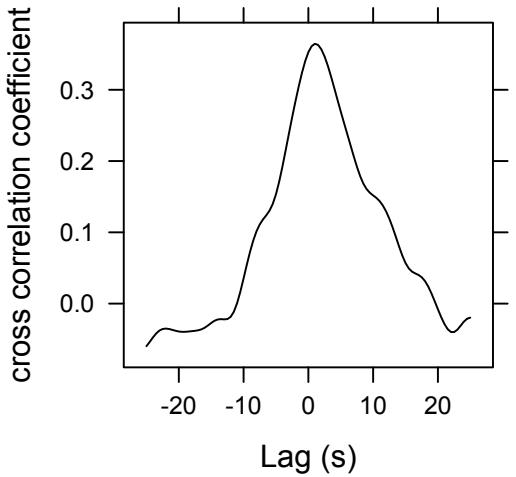


Figure S1. Cross-correlations between younger and older adult segmentation densities across lags from -25s to 25s, by movie and grain.

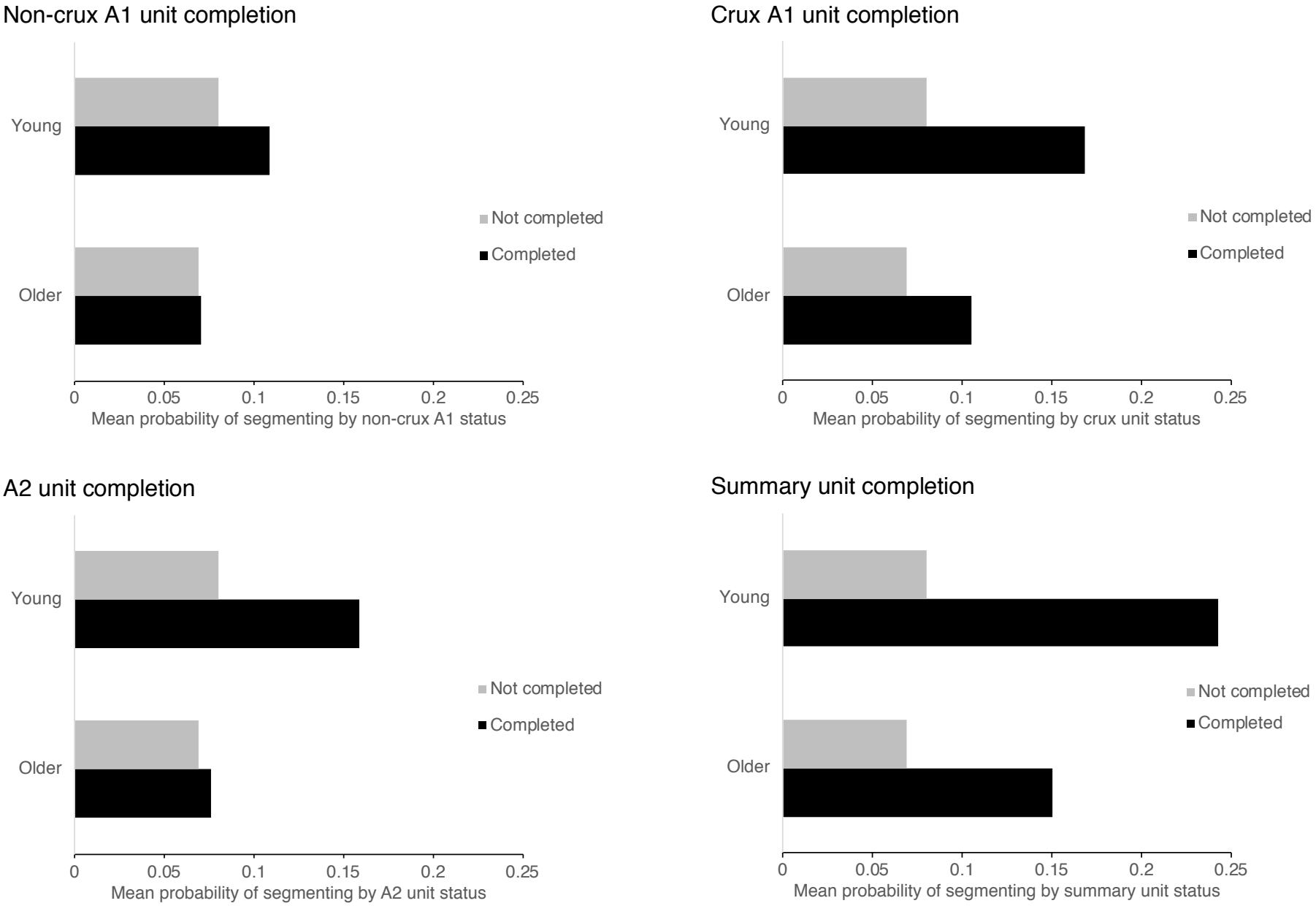


Figure S2. Mean probability of fine segmentation by goal completion and age.

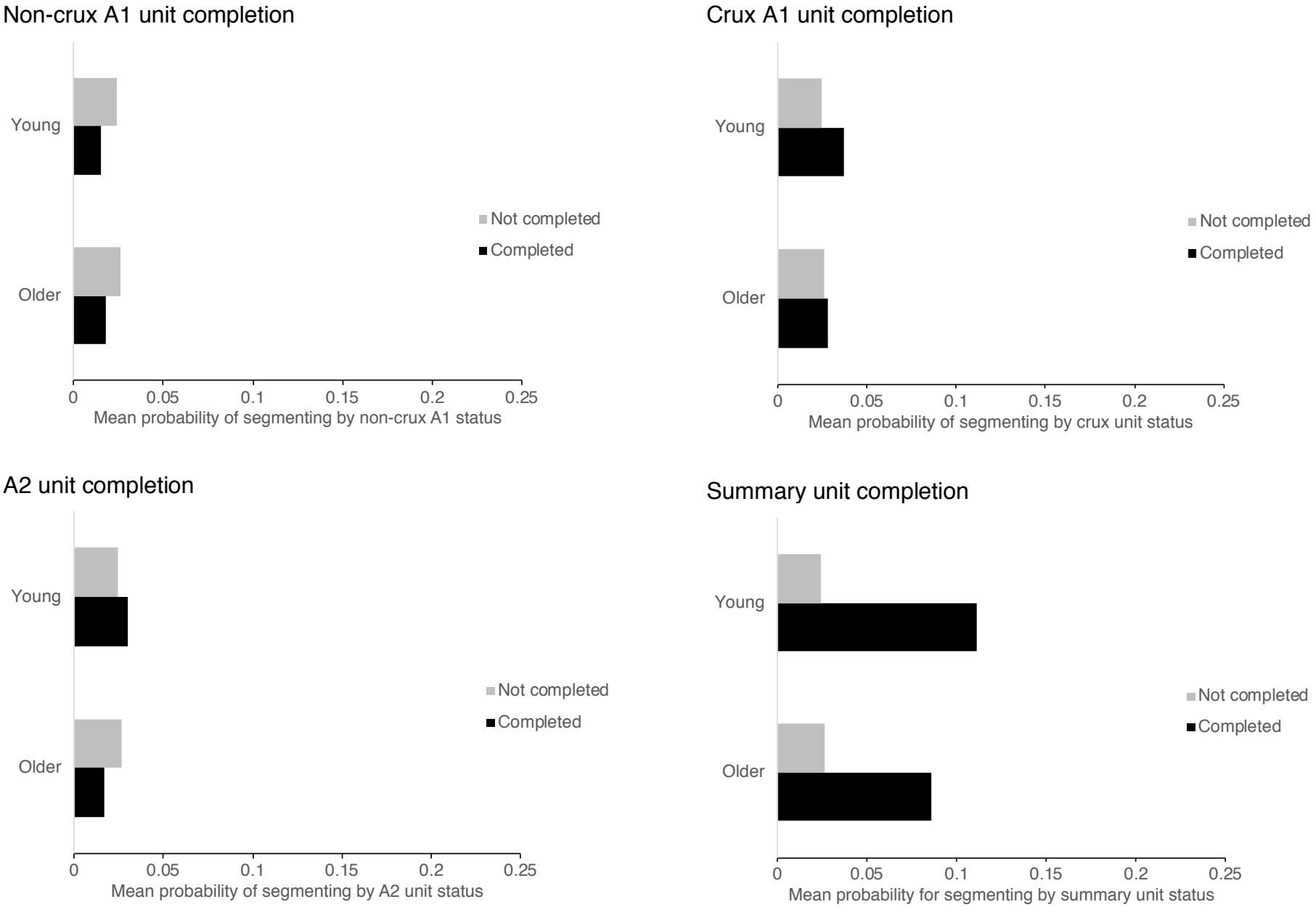
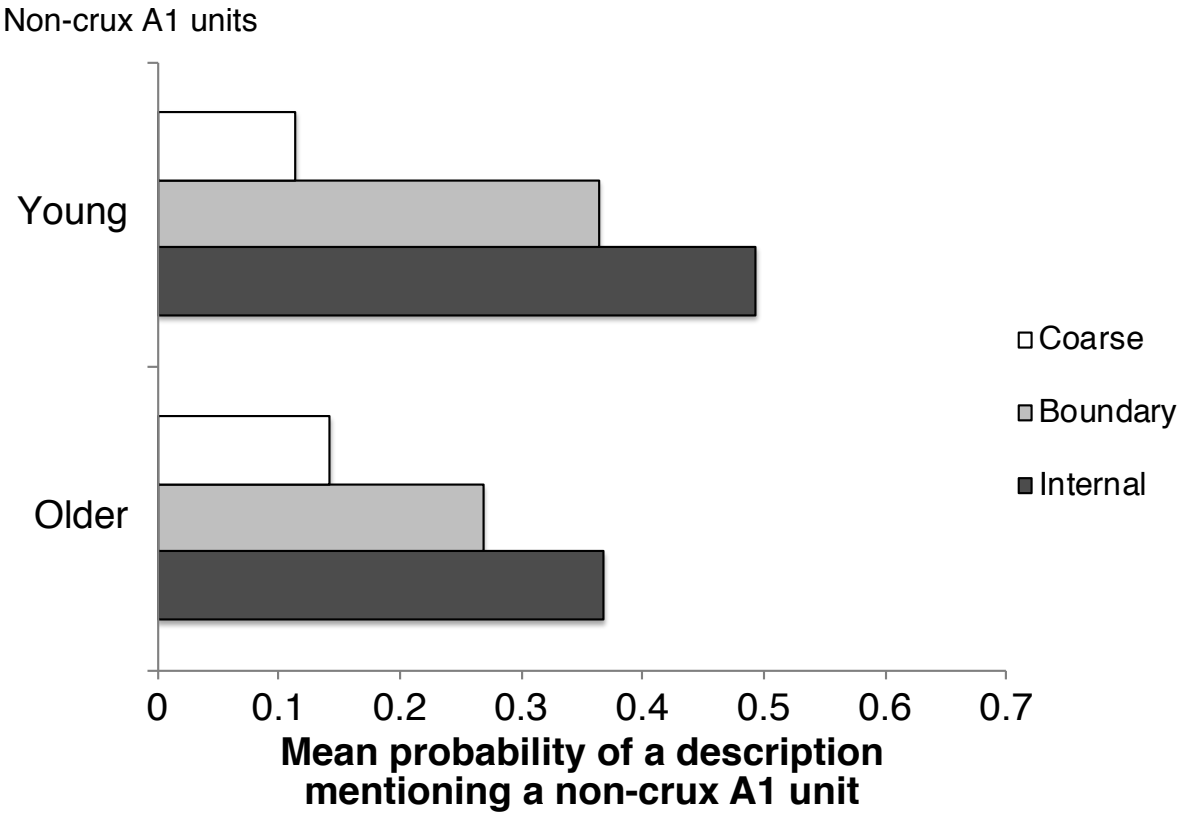


Figure S3. Mean probability of coarse segmentation by goal completion and age.



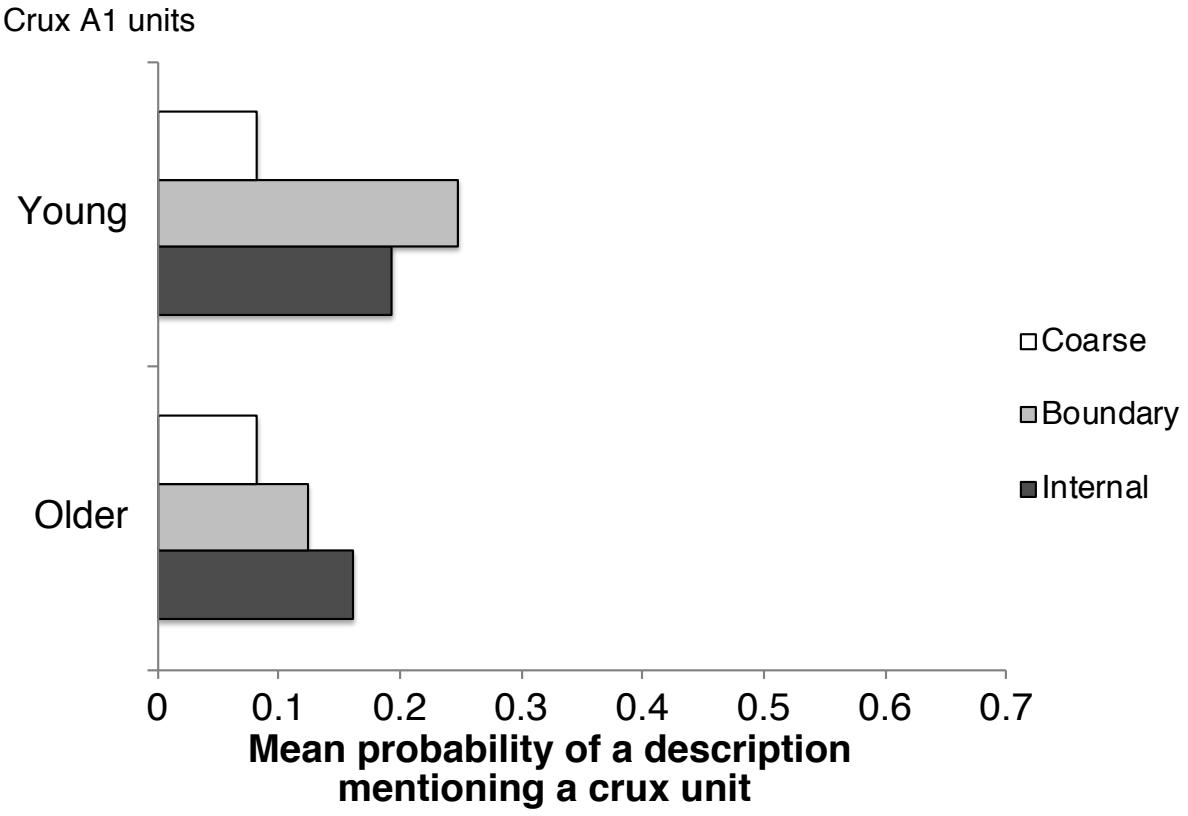
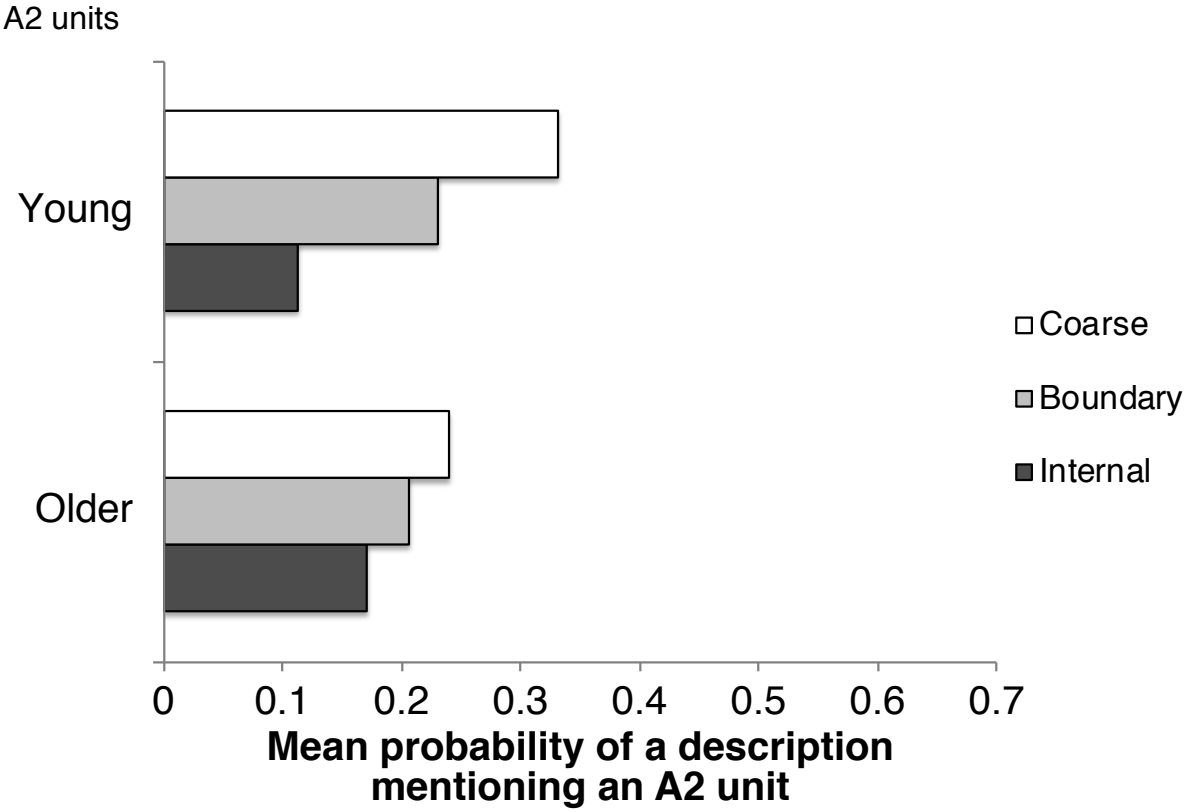


Figure S4. Mean probability of mentioning A1 units by event unit type.



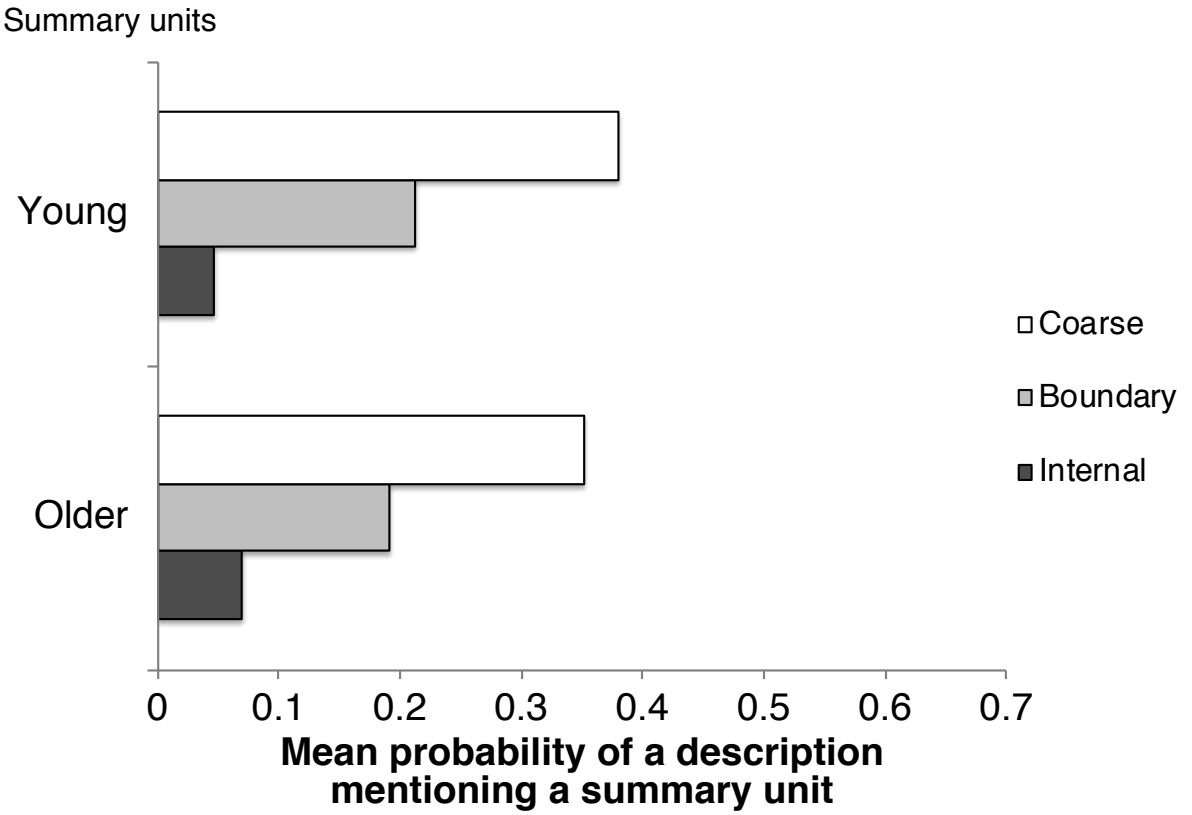


Figure S5. Mean probability of mentioning A2 and summary units by event unit type.