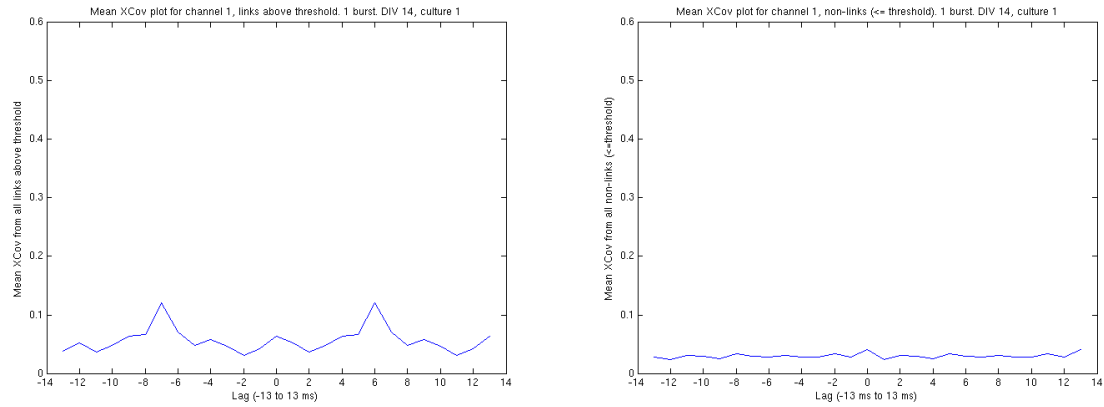


## Ability of the link definition threshold to identify genuine peaks

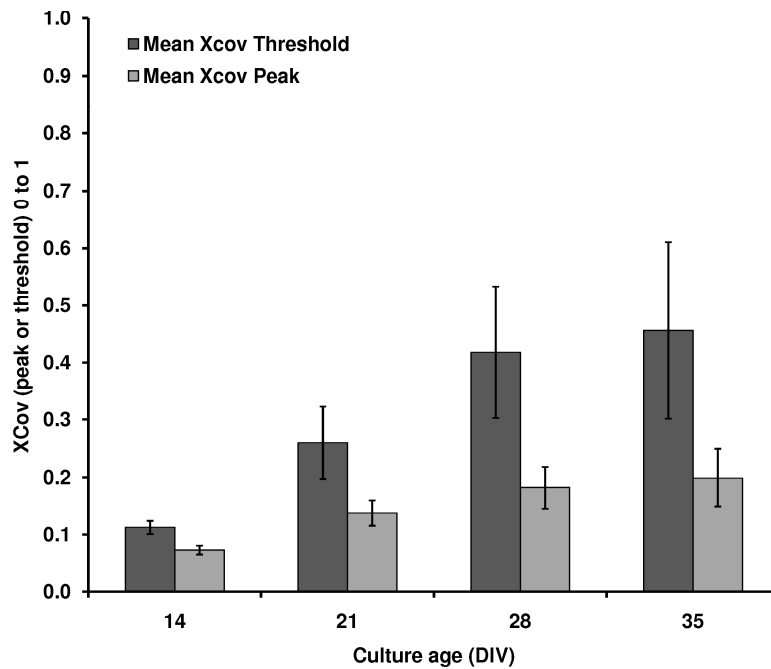
A



**The link definition threshold detected genuine peaks in the cross covariance plot (left), sub-threshold cross covariance plots did not show evidence of missed links (right).**

Mean XCov plots were obtained on a per-channel basis. The plots are from a representative channel during a representative burst. Each plot shows the mean XCov value at each lag. The left hand plot shows all channel pairs with a peak above the threshold (i.e. those that were considered to be related). The right hand plot shows all channel pairs with a peak  $\leq$  threshold (i.e. those that were considered to be un-related). NOTE: the slight peak at zero lag in the right hand plot was excluded, since times  $< 1$  ms were considered too short for synaptic transmission.

**B**



**The mean XCov threshold and peak at each culture age: Mean XCov threshold is well above the mean XCov peak plus one standard deviation.**

Mean cross covariance threshold (dark grey bars) and mean cross covariance peak (light grey bars) for all cultures at each stage of spontaneous development (4 conditions). Each bar was calculated from the mean XCov threshold (or peak), taken over all channel pairs, from all bursts (for each culture, then over all cultures). Error bars show the expected mean  $\pm$  one standard deviation (i.e. the variability between XCov thresholds or peaks).