Response of the motor speech system to unanticipated perturbation of the lip

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This study compared the responses of healthy young and older female adults to unanticipated mechanical perturbation of the lower lip. Participants (10 aged 22-33 yrs, 10 aged 48-67 yrs) sustained the vowel “ah” until hearing a tone, then produced the word “papa” for 300 trials. On 15% of trials, a 30g load was delivered just prior to the first lip closure for “p”. Perturbations were categorized as early (during motor programming processes) or late (during motor execution). Findings for young females replicated previous work. Older females differed from young with greater compensation in the unperturbed upper lip, relative to the perturbed lower lip, for both early and late trials. Older females appear to use a different strategy to compensate for perturbations. These findings will be interpreted within the DIVA model of speech control and changes in sensorimotor integration with aging.