

Mask wearing increases muscle activity around the eye during smiling, study finds

New research has found that wearing a mask tends to increase eye involvement when smiling. The findings appear in the journal [Scientific Reports](#).

“As almost everyone in Japan is wearing a face mask during the COVID era and we wanted to know if wearing a mask has any effect on the face,” said study author Shuntaro Okazaki, a senior researcher at the MIRAI Technology Institute. “I have previously studied social communication, so the first thing I wanted to know was whether the mask interferes with communication via facial expression or not.”

Okazaki and his colleagues used electromyography (EMG) to measure muscle responses as 20 women completed various tasks that involved smiling or talking with or without a mask. The researchers were particularly interested in the orbicularis oculi, zygomaticus major, and depressor anguli oris — facial muscles that are involved in smiling and speaking

Wearing a mask was associated with increased orbicularis oculi activity when smiling. In other words, the researchers observed increased muscle activity around the eye when the participants smiled while wearing a mask compared to when they were not wearing a mask.

“The mouth area is of course a key part of the face for communication, and I think that many people worry that mask wearing might interfere with communication,” Okazaki told PsyPost. “Our study shows that even when wearing a mask, we still use our facial muscles for smiling and moreover, the muscles around eye are especially activated. This suggests people may adopt a compensating action to overcome the interference of the mask on the communication of a smile.”

In contrast, muscle activity around the mouth when speaking or smiling showed no change between the masked and maskless condition. “Thus, there was sometimes an adaptation in the use of the eyes to indicate a smile, but this did not change the behavior of the muscles creating a smile with the mouth,” the researchers explained.

But the study, like all research, include some caveats.

“There are some limitations in this study. Firstly, we don’t know to what degree the increased activity in the eye muscles can compensate for the interference of the mask,” Okazaki explained. “Secondly, it would be interesting to discover if the increased eye activity is automatic or the result of conscious effort.”