Table S1: Comparison between FACS Action Units (AU) for humans (Ekman, Friesen & Hager, 2002), chimpanzees (Vick et al., 2007), and bonobos according to the underlying musculature. ✓- observed, x - not observed. Cells highlighted in grey are actions observed in bonobos.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **AU code** | **AU name** | **Underlying muscle** | **Human** | **Chimpanzee** | **Bonobo** |
| **AU1** | **Inner Brow Raiser** | Frontalis (medial) | ✓ | **x** | **x** |
| **AU2** | **Outer Brow Raiser** | Frontalis (lateral) | ✓ | **x** | **x** |
| **AU1+2** | **Brow Raiser** | Frontalis1 | x | ✓ | ✓ |
| **AU4** | **Brow Lowerer** | Procerus1, Depressor supercilii1, Corrugator supercilii1 | ✓ | x | x |
| **AU41** | **Glabella Lowerer** | Procerus1 | x | x | ✓ |
| **AU5** | **Upper Lid Raiser** | Levator palpebrae superioris and/or Orbicularis oculi1 | ✓ | ✓ | ✓ |
| **AU6** | **Cheek Raiser** | Orbicularis oculi1, pars orbitalis | ✓ | ✓ | ✓ |
| **AU7** | **Lid Tightener** | Orbicularis oculi1, pars palpebralis | ✓ | x | ✓ |
| **AU43** | **Eye closure** | ✓ | ✓ | ✓ |
| **AU45** | **Blink** | ✓ | ✓ | ✓ |
| **AU8** | **Lips Towards Each Other** | Orbicularis oris1 | ✓ | **x** | **x** |
| **AU9** | **Nose Wrinkler** | Levator labii superioris alaeque nasi1 | ✓ | ✓ | ✓ |
| **AU10** | **Upper Lip Raiser** | Levator labii superioris1 | ✓ | ✓ | ✓ |
| **AU11** | **Nasiolabial Furrow Deepener** | Zygomaticus minor1 | ✓ | **x** | **x** |
| **AU12** | **Lip Corner Puller** | Zygomaticus major1 | ✓ | ✓ | ✓ |
| **AU13** | **Cheek Puffer** | Caninus (or Levator anguli oris) 1 | ✓ | **x** | **x** |
| **AU14** | **Dimpler** | Buccinator1 | ✓ | **x** | **x** |
| **AU15** | **Lip Corner Depressor** | Depressor anguli oris1 | ✓ | **x** | **x** |
| **AU16** | **Lower Lip Depressor** | Depressor labii inferioris1 | ✓ | ✓ | ✓ |
| **AU160** | **Lower Lip Relax** | Relaxation of orbicularis oris/lower lip | **x** | ✓ | ✓ |
| **AU17** | **Chin Raiser** | Mentalis1 | ✓ | ✓ | ✓ |
| **AU18** | **Lip Pucker** | Incisivii labii (superioris and inferioris), Orbicularis oris1 | ✓ | **x** | ✓ |
| **AU20** | **Lip Stretcher** | Risorius | ✓ | **x** | **x** |
| **AU21** | **Neck Tightener** | Platysma myoides1 | ✓ | **x** | **x** |
| **AU22** | **Lip Funneler** | Orbicularis oris1 | ✓ | ✓ | ✓ |
| **AU23** | **Lip Tightener** | ✓ | **x** | **x** |
| **AU24** | **Lip Presser** | ✓ | ✓ | ✓ |
| **AU25** | **Lips Parted** | ✓ | ✓ | ✓ |
| **AU26** | **Jaw Drop** | Orbicularis oris1, Levator labii superioris1, Depressor labii inferioris1, non-mimetic muscles  Orbicularis oris1 | ✓ | ✓ | ✓ |
| **AU27** | **Mouth Stretch** | ✓ | ✓ | ✓ |
| **AU28** | **Lips Suck** | ✓ | ✓ | ✓ |
| **AU38** | **Nostril Dilator** | Nasalis1 | ✓ | x | ✓ |
| **AU39** | **Nostril Compressor** | Nasalis1, Depressor septi nasi1 | ✓ | x | ✓ |

1Described by Diogo et al (2017).