Facial Movements Strategically Camouflage Involuntary Social Signals of Face Morphology

* Animals use social camouflage as a tool of deceit to increase the likelihood of survival and reproduction. We tested whether humans can also strategically deploy transient facial movements to camouflage the default social traits conveyed by the phenotypic morphology of their faces. We used the responses of 12 observers to create models of the dynamic facial signals of dominance, trustworthiness, and attractiveness. We applied these dynamic models to facial morphologies differing on perceived dominance, trustworthiness, and attractiveness to create a set of dynamic faces; new observers rated each dynamic face according to three social traits. We found that specific facial movements camouflage the social appearance of a face by modulating the features of phenotypic morphology. A comparison of these facial expressions with those similarly derived for facial emotions showed that social-trait expressions, rather than being simple one-to-one overgeneralizations of emotional expressions, are a distinct set of signals composed of movements from different emotions. Our generative face models represent novel psychophysical laws for social sciences; these laws predict perception of social traits on the basis of dynamic face identities.
* Although some signals (eg facial expressions of emotion) can be voluntarily deployed strategically to negotiate social situations, other signals (eg those indicating social traits such as dominance, trustworthiness, and attractiveness) are transmitted involuntarily by the phenotypic morphology of the face (Oosterhof & Todorov, 2008).
* Humans are highly adaptive social beings; like other social animals, humans can camouflage these involuntary morphology-based signals to optimize success within their ecological niche.
* Here, we address three main questions about such *human social-camouflage strategies*.
  + Can dynamic facial signals camouflage the involuntary social signals transmitted by static facial morphology?
  + If they can, which specific facial movements camouflage which facial morphologies, and how efficiently do they do so?
  + How do dynamic camouflaging signals relate to other socially relevant dynamic facial signals, such as facial expressions of emotion?
* In Experiment 1, using a reverse-correlation approach, we modelled the dynamic facial signals of three basic social traits – dominance, trustworthiness, and attractiveness (Oosterhof & Todorov, 2008; Sutherland et al, 2013). Hereafter, we refer to these dynamic models as *dynamic social masks*.
* In Experiment 2, we examined the camouflaging capabilities of the dynamic social masks (ie whether they could override the involuntary social signals transmitted by static facial morphology)
* In Experiment 3, we examined the relationship between two dynamic systems of facial signalling, emotion and social traits, by comparing the action units (AUs) of dynamic social and emotional signals using the same reverse-correlation approach as in Experiment 1.