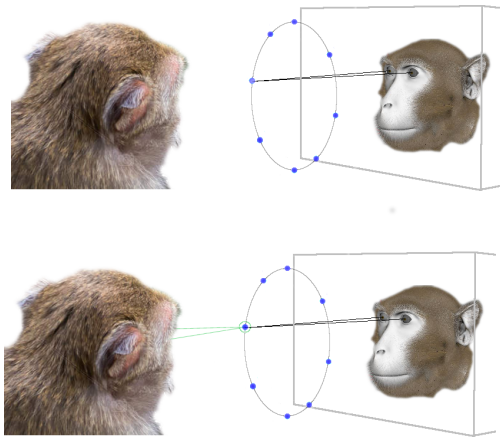


Master's Project in Behavioral Social Neuroscience

Humans follow the other's gaze in order to identify the object of interest to the other and to allocate attention to it. This ability to establish **joint attention** is a key step towards developing a full-fledged **Theory of Mind**, i.e. the ability to understand the other's needs, concerns, desires or intentions and the autistic phenotype is most probably a consequence of disturbances of this chain of processes. Also monkeys follow the other's gaze. As a



monkey's eyes are much less conspicuous than the eyes of humans, it is usually assumed that monkeys' gaze following is guided by the other's head gaze (i.e. head orientation) rather than by eye gaze (i.e. eye orientation). Yet, the relative contributions of eye and head gaze have never been explored in a quantitative manner. Also unknown is if the gaze following of monkeys is modulated by information on the other's emotional state as expressed by their face. Such a modulation is well-established for human eye gaze following and specific patterns of alterations have been observed in autistic subjects.

Studying the relative roles of the eyes and the head in monkey gaze following and its dependence on emotions will help us to shed light on the evolutionary history of a behavior that is at the center of viable social interactions in primates. Moreover, it will allow us to address the question if monkeys may serve as model species in studies of a major developmental disorder of humans — autism.

In order to explore the roles of the relevant variables we have developed a behavioral paradigm in which a trained rhesus monkey (observer) is asked to detect luminance changes of a target object, while at the same time a monkey head avatar is looking at the same or a different object, thereby drawing the observer's attention to the object singled out by the other's gaze, i.e. eliciting a gaze following "reflex". We expect that luminance change detection will be better in case the gazed at object is the object undergoing the luminance change. Resorting to a sophisticated **monkey avatar** developed in cooperation by the Giese and Thier labs rather than deploying natural agents will allow us to rigorously control all relevant parameters (eye vs. head gaze, facial expressions). The behavioral experiments will be closely supervised by an experienced doctoral student.

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