Aggression and sex differences in lateralization in the zebrafish

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Aggression plays an important role in survival and reproduction. It can be measured using mirror and dyadic tests, but there is some debate about whether interactions with a mirror image and with a real opponent measure the same aspects of aggressiveness. Variation in aggressiveness among individuals has been linked to behavioural lateralization. Lateralization, the preference for one side of the body over the other, has been reported widely in vertebrates. During aggression, individuals may use their right or left eye to view their opponent, but results vary among vertebrates; while some show a left-eye preference, others show a right-eye preference, with some individuals being more strongly lateralized than others within a population. In this study, we determined whether adult male and female zebrafish, *Danio rerio*, showed similar levels of aggression towards a mirror image as towards an opponent, and whether there were differences in eye use when the fish displayed aggressive behaviours. We found no difference in the rate of aggression shown towards a mirror image and an opponent, indicating that both tests are representative of the same measure. Furthermore, the sex of the zebrafish and the aggression test they experienced had a significant effect on eye use. Eye use by the females when viewing their opponent was similar to that of the males when they viewed an image and an opponent, but males used their left eye more.

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