Social rank influences macaques' risky decisions for economic gain

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Résumé

As initially described by the Prospect Theory, humans exhibited specific patterns of risk attitudes when confronted with economic dilemmas. Non-human primates were also found to display these decisional patterns and thus serve as an appropriate model for investigating the biological and socio-cognitive factors that may influence individual decision-making. As social animals, monkeys, like humans, live in structured societies where individual social rank may vary, providing a suitable framework for assessing the influence of social status on economic decision-making. Indeed, social rank may impact the accessibility of rewards, the accumulation of wealth, and the emotional well-being of individuals, which may influence their decision-making process, eventually in an adaptive manner. We took advantage of a unique research setup in which a semi-free-ranging group of Tonkean macaques (Macaca tonkeana) had free access to gambling tasks for months, providing hundreds of thousands of trials and a longitudinal measurement of social hierarchy. Using this protocol, we assess the influence of the dynamic of social ranking on individual decisions and found that high-ranking monkeys exhibit reduced risk aversion in gain domains, whereas no effect of social rank was observed in loss domains. No effect of the individual's age or sexe on risk attitudes was found. These results further confirm that cognitive biases are not exclusive to humans and highlight the pronounced asymmetry between economic decisions involving gains and losses in primates. Our study suggests that an individual's position within its social group plays a significant role in shaping its economic decision-making processes.

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