Effective communication requires reliable signals and competent receptors. Theoretical and empirical accounts of animal signaling focus overwhelmingly on the capacity of the signaler to convey the message. However, the impact of receptor organ condition on signal reception and its consequences for functional behavior are poorly understood. Social insects use antennae to detect chemical odors that distinguish between nest-mates and enemies, reacting aggressively to the latter. We investigated the impact of antennal condition, determined by the density of sensilla, on the behavior of weaver ants *Oecophylla smaragdina*. Worker aggression covaried with the condition of their antennae: workers with fewer sensilla on their antennae reacted less aggressively to non-nestmate enemies. These novel data highlight the largely unappreciated significance of receptor organ condition for animal communication, and may have implications for co-evolutionary processes in animal communication.