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Vasotocin Maintains Multiple Call Types in the Gray Treefrog, *Hyla versicolor*

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The neuropeptide arginine vasotocin (AVT) influences vocalizations in some anuran amphibians but it is unknown whether AVT alters all vocal behaviors of a species similarly. We first characterized the vocal repertoire of male gray treefrogs (*Hyla versicolor*). Three different call types were distinguished by unique sets of temporal and spectral features. Second, we examined the effects of AVT on each call type by injecting frogs with either AVT (100 μg; intraperitoneal) or saline and recording subsequent behavior. In the field, AVT maintained advertisement calling, whereas calling ceased in saline-injected animals. Advertisement call rate in AVT-injected males fell significantly and dominant frequency of the call was significantly higher. In the laboratory, AVT induced advertisement calling in males that were not initially vocalizing and dominant frequency was also significantly higher in these males. AVT maintained aggressive calling similarly but the characteristics of aggressive calls were not altered by AVT. There were no significant differences in release call behavior between AVT- and saline-injected groups; however, release call duration decreased significantly in AVT-injected animals, compared with preinjection values for the same animals. The effects of AVT on vocal behavior in this species are therefore not the same for each call type. AVT may act at more general motivational levels in the central nervous system and other neural or endocrine factors may control choice of call type and direct motor output.

Key Words: reproductive behavior; aggression; vasopressin; frog; vocalization; neuropeptide.