

***STUDENT PAPER WINNER:
ABSTRACT***

***AN ADJUSTING-DOSE PROCEDURE TO IDENTIFY THE OPTIMAL
REINFORCING DOSE OF NITROUS OXIDE***

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Despite continued abuse, there is a paucity in empirical investigations on inhalants as reinforcers. The present study attempted to derive a method for studying the reinforcing effects of nitrous oxide (N₂O) with human participants. An adjusting-dose procedure was employed to assess choice allocation for inhalation periods of varying doses of N₂O. After experiencing the experimental parameters in forced choice trials, participants made choices between a fixed dose of 0% N₂O (i.e., 100% O₂) and an adjusting dose of N₂O (0-50% N₂O in O₂). The adjusting dose titrated as a function of the participant's choices. Specifically, if the participant chose the adjusting dose in both free-choice trials, the adjusting dose was increased in the subsequent trial block. If the participant chose the fixed dose of 0% N₂O in both free-choice trials, the adjusting dose was decreased in the subsequent trial block. If the participant chose one of each, the adjusting dose remained the same in the subsequent trial block. Conditions were run to stability and systematically replicated within-subject. Stable choice allocation served as both the chief dependent variable and an indication of the optimal reinforcing dose of N₂O for that participant. Consistent with previous research on N₂O, there was between-subject variability in the reinforcing effects of N₂O; however, stable within-subject choice allocation was observed for 6 out of 8 participants. This method of assessing drug choice in humans allows for the testing of multiple doses within-subject, which is imperative, given that the reinforcing effects of drugs are known to vary across subjects and as a function of dose.