Subjective and Physiological Effects of Intravenous Nicotine and Cocaine in Cigarette Smoking Cocaine Abusers


Cocaine and nicotine are among the most widely abused substances in the world. Cocaine and nicotine work in the brain to produce altered subjective and physiological effects, and their modes of action are similar: Both drugs act to increase dopamine activity and cause increased heart rate and blood pressure as well as positive subjective effects in lab subjects. Until this study, however, they have not been directly compared in the same experiment.

Subjective and physiological effects of intravenously-administered nicotine and cocaine were measured in 10 cigarette-smoking cocaine abusers in a controlled environment. During the sessions, study participants were monitored for a number of physiological measures, including blood pressure, heart rate, respiration rate, and skin temperature. Participants were also required to answer questions about how they felt and how well they “liked” the drug during the session. They were further asked to assign a monetary value to each drug condition in a “drug-versus-money” measure.

Both nicotine and cocaine increased blood pressure and heart rate and decreased skin temperature. When asked to rate how they felt before and after receiving each drug, participants said that both cocaine and nicotine increased positive subjective effects such as “liking,” “high,” and “stimulated,” but that only nicotine increased “bad effects” and jitteriness.

Nicotine triggered a more rapid onset of subjective effects than did cocaine. Although the highest nicotine dose produced greater subjective effects than the highest cocaine dose, the highest cocaine dose produced higher ratings of drug “liking.” The drug-versus-money measure showed that the highest cocaine dose was worth twice as much as the highest nicotine dose. The main finding was that intravenous cocaine and nicotine can be differentiated by their subjective and reinforcing effects.

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