The Effect of LSD on Sleep-Deprived Men

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Abstract. Thirteen young men were tested to determine the motor, attention, physiologic, and behavioral effects of 1.5 μg/kg of LSD taken orally after one or two nights' loss of sleep. Twenty additional subjects were tested in two control categories: 1.5 μg/kg of LSD alone and one night's sleep loss alone.

The major significant results of the study were: the onset of characteristic LSD behavior and attention impairments was more rapid in those men who received LSD after loss of sleep than in the drug-alone group; the sleep-loss-LSD subjects showed inaccuracies in problem solving and vigilance tests not present in the controls; and the men who received LSD after two nights' loss of sleep showed increases in pulse rate, pupil size, and 3-hour plasma levels of LSD when compared with those subject groups which received the drug alone and the drug after one night's sleep loss.

Key-Words: LSD 25 — Sleep Derivation — Attention — Performance — Hallucinations.

I. Introduction

A careful search of the literature reveals only one prior study on the performance of sleep-deprived individuals who received psychotomimetic drugs. Bliss and coworkers (1959) gave a nonhallucinatory dose of LSD (0.5 μg/kg) to four subjects after they had been without sleep for 48 hours, and all experienced visual hallucinations. Bliss and coworkers' description of this accentuation of drug effect by sleep loss was not part of the main body of their paper, and it was believed that their findings merited more intensive investigation.

This study is a larger, more detailed one, primarily measuring motor, attention, vigilance, and behavioral impairments in sleep-deprived subjects who received LSD. It was completed in 1966.

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1 No work with LSD in human subjects has been done since then at U.S.A. Edgewood Arsenal, Md.
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II. Methods

A. Subjects. All Subjects were U. S. Army enlisted men who were told at their army posts about the U. S. Army Edgewood Arsenal volunteer program. At this briefing, all those men who chose to enter the program were given group screening tests: a Minnesota Multiphasic Personality Inventory, projective tests, and a social history questionnaire. These were scored and rated. Only those men judged to have very few social and psychological irregularities, approximately 20% of those who volunteered, were accepted. (The primary motivations for volunteering were: duty on the East Coast and 3-day weekend passes).

The men who were chosen for this particular study were selected from the group of accepted volunteers deemed particularly capable of receiving psychochemicals. These men were then placed without bias into one of the test categories.

B. Subject Briefing. At least three days before the drug tests, the subjects were briefed by a physician. Subjects were not told what drug they would receive. They were merely told that they would receive a frequently used drug which in certain doses caused minor to moderate degrees of confusion. The men had the option at that point to choose, without penalty, alternative non-chemical tests.

C. Subject Categories. Thirty-three men were tested in one of the following four categories: 10 (drug alone) received 1.5 µg/kg of LSD; 10 (sleep loss alone) were deprived of one night’s sleep and given a placebo; 10 (1N sleep loss-drug) received 1.5 µg/kg of LSD after being deprived of one night’s sleep; and three (2N sleep loss-drug) were kept awake two nights and given the drug. An oral dose of 1.5 µg/kg of LSD was used uniformly in this study because it approximates the standard dose of the drug (100 µg).

Data from five subjects who received 2 µg/kg of LSD orally in a prior study\(^2\) were included for purposes of comparison in Tables 1, 3 and 4.

D. Testing Procedures. The subjects were tested in groups of three or four. One group of three was admitted to the medical ward three nights before drug administration and the men remained awake the next two days and nights. The other groups were admitted two nights before drug administration. Baseline measurements were done on the day after admission. That evening, two of the men from these groups were kept awake and the other one or two were allowed to sleep as usual. Those assigned to the sleep loss group were constantly accompanied by an aid man and were not allowed to sleep or doze. At 8 A.M. the next morning.

\(^2\) All doses are expressed in terms of the weight of the base.

\(^3\) See footnote c, Table 1.