

MDMA Neurotoxicity Research: Methodological Concerns

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CONSIDERABLE MEDIA ATTENTION has been given recently to investigators purporting to demonstrate neurotoxic brain damage in humans who had self-administered large amounts of the polymorphous drug Ecstasy. There is insufficient evidence, however, to extrapolate these findings to single dose effects of MDMA. Furthermore, methodological weaknesses in the humans studies call into question data interpretation attempting to assert that MDMA damages neurons after single or even a few multiple doses. Although animals given large dosages of MDMA appear to undergo extensive loss of 5-HT axons and terminals, evidence for functional sequelae has been scant. There is no evidence demonstrating conclusively that therapeutic doses of pure MDMA given under controlled conditions lead to neuron degeneration or that users who experimented only with a few modest doses of MDMA have suffered any sort of neurological deficit.

INTERPRETATIONS OF HUMAN DATA also contain severe methodological limitations. All subjects were heavy users of the street drug, Ecstasy, a term encompassing a variety of substances other than MDMA, sometimes including ketamine and other adulterants. Furthermore, these Ecstasy-MDMA subjects also had histories of considerable cocaine and methamphetamine use, while non-MDMA using controls were often highly motivated graduate students free of other drugs as well. Although demonstrations of minor cognitive deficits and suspect personality traits have been variable, little can be concluded because of the variety of drugs used and the poorly matched controls.

THERE IS A PRESSING NEED to conduct prospective human research with MDMA. Unfortunately, public apprehension fueled by sensationalist and often inadequately informed media have constricted scientific dialogue. Pressing public health concerns of long-term effects to an increasing percentage of European and American youth remain unanswered. Persistent interest in MDMA's possible *therapeutic role* must also be addressed. MDMA's potential to cause harm as well as capacity to facilitate healing when used under optimal conditions can only be answered using well-controlled prospective research designs. •

Reference

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