A New Stimulant of Abuse: 5-(2-aminopropyl)indole

To the Editor: In recent years, an increasing demand for legal substances of abuse that mimic the effects of traditional and illicit drugs has resulted in the appearance of several new compounds in the recreational drug market. These new substances, generally marketed as "legal highs," are synthetic products and vegetable derivatives sold online or in specialized street shops known as "head" or "smart" shops. In particular, many research compounds, generally marketed by specialized suppliers and labeled "not for human consumption," have become popular among drug users for their strong psychotropic effects. The growing phenomenon of legal highs has resulted in numerous confirmed cases of severe intoxication and fatalities related to the consumption of new recreational drugs in many countries. A potential recreational drug of abuse named 5-(2-aminopropyl)indole (also known as 5-API or 5-IT) has been recently flagged in Sweden. In 2012, the Swedish Poisons Information Center reported several cases of severe intoxication related to the consumption of 5-IT. In addition, the National Laboratory of Forensic Toxicology has analytically confirmed the presence of 5-IT in 14 postmortem examinations. The postmortem blood concentration range was between 0.7 and 5.2 μg/g in 10 cases; no quantitative data were reported in the other four cases. The femoral blood concentration was 18.6 μg/g in one individual, and 5-IT was the single substance found and was identified as the cause of death in two others (1). Furthermore, 5-IT was found in combination with other drugs in postmortem blood samples of two young adults in the United Kingdom (2).

5-IT is a little-known 5-positional isomer of α-methyltryptamine, a synthetic indole analog of amphetamine. This molecule shows a bicyclic structure consisting of a six-membered benzene ring fused with a five-membered nitrogen-containing pyrrole ring, and it is considered the only psychoactive α-methyltryptamine positional isomer (3). To our knowledge, no formal study has investigated the pharmacological and toxicological properties of this substance. Users have reported that the desired effects include mild euphoria, mood enhancement, greater sociability and energy, and intensification of sensory experience. Users have also reported untoward effects such as anxiety, psychomotor agitation, confusion, insomnia, sweating, restlessness, tremors, jaw clenching, dilated pupils, and increases in heart rate, blood pressure, and body temperature. 5-IT is generally consumed intranasally or orally, and the dosage range reported by users is between 50 mg and 120 mg. The onset of action occurs within 30 minutes to 1 hour of ingestion, and the effects may last up to 10 hours (1, 4).

In conclusion, 5-IT appears to be a strong stimulant producing amphetamine-like effects. International cooperation is of great importance in monitoring and preventing the spread of this dangerous recreational substance.

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Recalling Martin Luther King: Obama's Effect on Memory

To the Editor: Memory distortion is a normal consequence of memory function (1) that has effects in psychiatry and in society. Early laboratory research found that pre-existing knowledge influences memory formation (2) and that learning new information can alter formed memories (3). Nonempirical studies have indicated that memory is also susceptible to distortion by sociocultural events or change (4, 5). I present here empirical observations indicating memory distortion related to the election of Barack Obama to President of the United States that have implications for understanding how social stereotypes and sociocultural change affect memory.

Motivated by observations made during court-ordered competency evaluations, a record review was performed on all evaluations completed by a regional office in 2008 and 2009 (N=198). Collected information included date of evaluation, competency opinion, demographic characteristics, measures of concentration and short-term memory, and the answer to the question "Who was Martin Luther King Jr.?" (N=92). Exemptions from further review were obtained from the Yale University and State of Connecticut institutional review boards before this research was conducted.

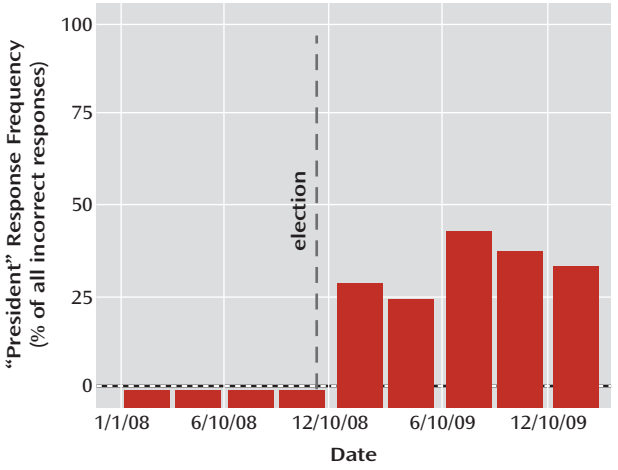
Before December 10, 2008, no person who was asked that question gave the answer "President" or anything similar. From that date onward, "President" became a common wrong answer (Figure 1), and its increase in frequency was statistically significant as a proportion of wrong answers given (0/13 before and 11/32 after; $p=0.019$) and as a proportion of all answers, either correct or incorrect (0/29 before and 11/63 after; $p=0.032$). No significant differences were observed among respondents in percent of correct answers or on measures of demographic characteristics, forensic finding (competent or not competent), short-term recall, or working memory.

Individuals who answered correctly at any time were more educated than those who answered incorrectly (mean=12.1 years of school [SD=2.4] and mean=10.6 years of school [SD=2.2], respectively; $p=0.002$), performed better on simple cognitive tests (e.g., digits forward; $p=0.001$), and did not differ in race (26% African American and 72% Caucasian compared with 27% African American and 67% Caucasian). Among those who answered incorrectly after December 10, 2008, no

significant differences were observed on measures of demographic characteristics, forensic findings, or cognitive performance between those who answered "President" or gave a different incorrect answer. Representation of African Americans among those who answered "President" (45%), was numerically higher than among those who gave other incorrect answers (19%; $p>0.1$).

Despite limitations, these results suggest that the change in answers given after President Obama's election reflects (post-encoding) distortion. Such a finding implicates social stereotyping as relevant to memory distortion (6), with potential consequences for collective memory (7). For example, individuals who believe that Dr. King could have been President might be more likely to promulgate or accept views that overestimate the historical access to political power available to minorities in the United States. In this context, these results highlight the potential importance of more subtle but pervasive distortions of individual and collective memory that is caused by predominant stereotypes and allows status quo views of history to be promulgated with little question.

FIGURE 1. The Frequency of the Response "President" to the Question "Who was Martin Luther King Jr.?"[a]



[a] Shown as a percent of all incorrect responses from January 1, 2008, through December 31, 2009. The date of the election of Barack Obama is indicated with a dotted line.

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Corrections

In the letter "Transcranial Stimulation for Psychosis: The Relationship Between Effect Size and Published Findings," by Iris E. Sommer, M.D., Ph.D., et al. (Am J Psychiatry 2012; 169:1211–1211), the middle initial of one of the authors was incorrect. The third author's name should have been Christina W. Slotema, M.D., Ph.D.

In the article "Meta-Analysis of Nonpharmacological Interventions for Neuropsychiatric Symptoms of Dementia," by Henry Brodaty and Caroline Arasaratnam (Am J Psychiatry 2012; 169:946–953), Ms. Arasaratnam's degree was listed incorrectly. She has a Bachelor of Science degree with honors (B.Sc. [Hons]) in psychology.

In the article "White Matter Abnormalities in Veterans With Mild Traumatic Brain Injury," by Ricardo E. Jorge, M.D., et al. (Am J Psychiatry 2012; 169:1284–1291), the acknowledgment of funding was incomplete. The acknowledgment should read "Supported by VA Merit Research Award D7201I and by National Institute of Neurological Disorders and Stroke grant 5R01NS55827 to Dr. Jorge."