

Letter to the Editor

Assessing Cognitive Functioning in Cannabis Users: Cannabis Use History an Important Consideration

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Sir

We read with interest the recent report by Ramaekers *et al* (2006) examining the effects of marijuana on executive cognitive function. These researchers concluded that smoked cannabis ‘negatively impact neuropsychological performance domains that have previously been suggested to be relatively insensitive to cannabis intoxication.’ As these findings appear to be incongruent with previously published data (eg Hart *et al*, 2001), Ramaekers *et al* (2006) speculated that this apparent discrepancy was most likely the result of researchers testing lower THC-containing cigarettes in previous studies. Indeed, Ramaekers *et al* argued that the largest dose evaluated in their study was twice as large as the largest THC dose used in the study by Hart *et al*. At least two important issues in the present study warrant comment.

First, Ramaekers purport that the largest amount of THC contained in the marijuana cigarettes employed Hart *et al* was equivalent to approximately 17.5 mg. This claim is inaccurate. In our study (Hart *et al*, 2001), the high THC concentration cigarettes contained 3.9% THC (each cigarette weighed 1 gram), and on average, study participants smoked three quarters of the cigarette within a 3-min period. This is equivalent to approximately 30 mg of THC, which is similar to the largest dose (35 mg) evaluated in the Ramaekers *et al* study and considerably larger than the 17.5 mg estimate. It is important to note also that peak subjective ratings of ‘high’ were similar in both studies and that both THC concentrations used in the study by Hart *et al* produced significant elevations in heart rate (heart rate

was not assessed in the study by Ramaekers *et al*). These observations indicate that the THC concentrations studied in the Hart *et al* investigation were equivalent to those used in the study by Ramaekers *et al*, suggesting that factors other than THC dose were responsible for the apparent discrepant findings.

Second, the study participants employed by Ramaekers *et al* were novice compared with the cannabis smokers used in the study by Hart *et al*. That is, the average reported cannabis use of participants in the Ramaekers study was approximately three times per month, whereas participants in the Hart *et al* study reported almost daily (ie, 6 days/week) cannabis use, averaging four marijuana cigarettes per smoking day. While this important methodological difference was minimized in the report by Ramaekers *et al*, a burgeoning body of evidence indicates that frequent cannabis smokers, unlike infrequent smokers, are tolerant to many cannabis-related performance-impairing effects (eg, Ward *et al*, 1997; Heishman *et al*, 1997; Haney *et al*, 1999a,b; Hart *et al*, 2001, 2002). In view of this information, it is appears that the most likely factor responsible for the disparate findings is the cannabis use histories of the participants employed in the two different studies. Together, these observations highlight the importance of taking into account the cannabis use history of individuals when drawing broad conclusions regarding cannabis-related effects on cognitive functioning.

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