

Characteristics and Behaviors of Ketamine Users in France in 2003†

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Abstract—The increase in recreational use of ketamine in France led to the carrying out of a survey aimed at depicting the sociological profiles of French ketamine users, their addictive behaviors, and the characteristics relevant to the use of the substance. This survey is based upon the analysis of 250 questionnaires, 24 semi-directive interviews, and two focus groups. Data was collected between July 2002 and June 2003 among individuals who had used ketamine at least once since January 1, 2001. The respondents were mostly males with a polydrug addiction, aged about 24, with little post-secondary education and no steady job. Ketamine was generally the last substance experimented with throughout their lifetime, as of the age of 22. The article reviews the frequency of ketamine use observed in the population surveyed, as well as the routes of administration, the quantities used, the circumstances of use, the sought-after effects and those experienced, and the risks perceived by the users themselves. The data collected provides working facts to allow for the development and implementation of policies for preventing the use and abuse of ketamine among vulnerable populations.

Keywords—addictive behaviors, ketamine use, risk behaviors, risk perception

Ketamine hydrochloride, synthesized for the first time in 1962, is an anesthetic compound used in human and veterinary medicine. One of its properties is that it helps maintain spontaneous respiration as well as pharyngeal and laryngeal

†The authors want to acknowledge the following colleagues for interviewing ketamine users (using the TREND Observatory Device): Jimmy Kempfer, ASUD, Paris; Malika Tagounit, RES, Paris; Saloua Chaker, Graphiti, Toulouse; Anne-Cécile Rahis, CEID, Bordeaux; Guillaume Poulingue, Emilie Even, Eric Le Moal, Mylène Guillaume, CIRDD, Rennes; Céline Verchère, Emmanuelle Hoareau, Laetitia Poulet-Coggia, Benjamin Videau, Philippe Thiemonge, Sandrine Musso, GRVS, Nice – Marseille; Simon Cathcart, Health Protection Agency, London and SYACOM, Paris for revising the article; and the French Monitoring Centre for Drugs and Drug Addiction, Saint Denis, France for funding.

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reflexes among individuals or animals under anesthesia. However, the length of emergence from anesthesia and the frequency of unpleasant dreams and hallucinations have led to the reduction of its use in human medicine (Bello et al. 2004; Lalonde & Wallage 2004). Related to phencyclidine (PCP), ketamine not only has analgesic but also hallucinogenic and dissociative properties (Freese, Miotto & Reback 2002; Smith, Larive & Romanelli 2002), which may lead to an out-of-body sensation (Jansen 2000).

The harmful consequences of recreational use of ketamine are starting to become better known. Irreversible effects upon memory have recently been shown. When compared with polydrug controls, ketamine users who had reduced their use frequency of the substance over a monitored three-year period showed recovery of their speed of comprehension, but with some gaps as far as prose recall is concerned (Morgan, Monaghan & Curran 2004). The same study revealed higher levels of schizotypal symptoms in the ketamine group. Deaths in relation to ketamine abuse are

very rare, but some marginally established cases do exist, including those where use was in association with no other substance (Lalonde & Wallage 2004).

Until the mid-1980s, recreational use of ketamine was mainly restricted to North America and linked to groups of individuals who were most often involved in the medical field or those who claimed alternative (New Age) spirituality (Jansen 2000). The use of ketamine then began to spread from techno clubs and rave parties, where it was perceived as being part of the "dance culture" (Jansen 2000).

This same diffusion can be observed presently in many countries around the world. For example, in Australia, a study of 350 regular Ecstasy users (at least six doses per month on the day the survey was carried out) showed that 27% of them had already used ketamine and 14% had used it over the previous six months (Breen, Topp & Longo 2002). In Taiwan, another study of 149 urine samples collected in a large nightclub showed that 47% of the samples were ketamine-positive (Ahai Chang Lua et al. 2003).

In Europe, the use of ketamine was observed during the 1990s, mainly among individuals attending the techno club scene (Fontaine et al. 2001). In a survey of club-goers in Great Britain, 10% of them declared that they took ketamine on a regular basis (Mixmag 2002). In Spain, a survey was carried out among individuals going to a prevention stand within two club venues (in techno discos in Madrid, $n = 112$; in a Barcelona rave party, $n = 291$). In Madrid, 4% of the respondents claimed having used ketamine at least once on a recreational basis. In Barcelona, 21% claimed the same, and 3% of the polled individuals alleged daily ketamine use (Downing 2002). In France, a study also carried out in the techno club environment (in rave parties and club venues) showed that 27% of the respondents ($n = 596$) had already used ketamine in their lifetime, and 4% of them recently (at least once in the previous month) (Bello et al. 2004). Further observations made in France proved that the use of ketamine was not restricted to the dance culture context.

From 1999 to 2003, the TREND observatory device allowed the geographical and quantitative diffusion of ketamine use to be observed. This surveillance system combines field observations from nine French urban sites whose coordinators carry out qualitative data collection based on ethnographic observations, focus groups, and in depth questionnaires filled out by risk reduction services and health services as well as collecting quantitative data. The quantitative surveys, collected from individuals going to low threshold structures (syringes exchange schemes, drop-in centers), showed that the use of ketamine in the previous month amounted to 7% in 2001 and 2002, and 10% in 2003 (Bello et al. 2004, 2003, 2002). In 2003, 25% of these respondents ($n = 1,082$) reported having used ketamine more than 10 times during their lifetime (Bello et al. 2004). Use of ketamine more than 10 times was much more common among 15- to 24-year-olds (38%) than among those 25 years old and older (8%).

PURPOSE OF THE STUDY

This increase in ketamine use in various environments in France led to the need for a more accurate depiction of the sociological profiles of French ketamine users, their addictive behaviors and the specifics of ketamine use (circumstances of use, effects and purposes of the substance, risks attributed to use by the users themselves).

METHODS

Data Collection

All data collection was performed between July 2002 and June 2003. Three data collection tools were chosen:

- Quantitative study: An ad hoc transversal study on ketamine users gathered 250 people contacted by snowball strategy, who were asked to answer a short questionnaire on sociodemographic characteristics, the use of ketamine, the use of other substances, and risk behaviors.

A two-part qualitative study was then undertaken, consisting of:

- In depth biographical interviews with 24 people selected from the previous sample, covering the widest range of addictive behaviors.
- Two focus groups of eight ketamine users each were formed from the previous sample to study the effects produced by ketamine and the perceptions they had of the substance. Attention was paid to greater experience and higher duration of use.

The case definition for a ketamine user was an individual having used ketamine at least once since January 2001. Ketamine users polled for the qualitative study were mostly experienced users: half of the individually interviewed respondents as well as two-thirds of the individuals in the focus groups use or have used at least weekly.

The respondents included in the study came from different French cities: Bordeaux, Marseille, Nice, Paris, Rennes and Toulouse. Snowball sampling was used for including individuals into the study: 70% of the respondents were recruited through the techno festival scene, and 30% of them through drug-addiction centers and treatment organizations.

Quantitative data from the 250 questionnaires were recorded and analyzed with Sphynx software (Sphynx Millennium). Dichotomous data were analyzed using the chi-square test. For some variables, univariate odds ratios (OR) were also produced with a 95% confidence interval (CI).

A comprehensive analysis was applied to qualitative data by means of a thematic classification of discursive data. The sociodemographic characteristics of the individuals recruited for the qualitative survey were similar to those of the group recruited for the quantitative survey.

TABLE 1
Characteristics of the Initiation to Psychoactive Substances (N = 250)

Psychoactive Substances	Median Age at First Intake	Mean Age at Second Intake	Min/Max Age	Standard Deviation	At Least One Dose during Lifetime	
					N	%
Solvents	14	14.7	10-25	2.3	94	38%
Cannabis	15	15.1	7-25	2.5	249	100%
Poppers	18	17.8	12-26	2.9	178	71%
LSD	18	18.0	11-29	2.9	243	97%
Hallucinogenic mushrooms	18	18.6	11-31	3.0	239	96%
Ecstasy	18	18.9	13-36	3.4	244	98%
Codeine	18	19.1	13-29	3.3	64	26%
Cocaine	19	19.1	14-30	2.8	243	97%
Rohypnol® / flunitrazepam	19	19.7	14-27	3.2	38	15%
Other benzodiazepines	19	19.5	14-32	3.4	70	28%
Amphetamines	19	19.7	13-36	3.6	217	87%
Artane® / Trihexyphenidyl	20	19.8	16-25	2.5	20	8%
Heroin	20	20.3	14-30	3.4	172	69%
Crack / Freebase	21	21.5	14-40	4.0	130	52%
Subutex® / Buprenorphine	21	22.1	15-37	4.7	88	35%
Ketamine	22	22.4	15-45	4.5	250	100%
Methadone	22	23.0	16-34	4.7	38	15%
Morphine Sulfate	22	23.6	16-38	5.5	56	22%

RESULTS

The respondents interviewed for the quantitative part of this study were primarily males (65%), young (24 years old on average), mainly single (71%), with little post-secondary education (36% were post-secondary graduates) and rarely having steady employment (33%). Those who were students (12%) were mostly holders of a post-secondary degree (25/29). The females included in the sample were much more likely than the males to have this type of degree (57%, 50/88 vs. 24%, 39/162; $p = 0.0001$). Only one individual (0.4%) had never attended a techno event. The majority of the respondents had attended a free party (a techno event taking place illegally) more than 10 times (84%). Half of the group had already attended a rave party more than 10 times (53%), and a techno festival (festival lasting several days) more than 10 times (42%).

In both parts of the survey (quantitative and qualitative), ketamine was generally a substance experimented with or regularly used by polydrug users, who were already using various psychoactive substances when they first tried ketamine. Individuals who claimed having smoked during the last month represented 96% of the surveyed group. The majority of them smoked more than 10 cigarettes per day (65%). During the same period, 92% of them had consumed alcohol. Among the latter, 32% affirmed having consumed alcohol at least four times per week, and 43% drank not less than five glasses each time. Nearly all of the surveyed population reported having already used cannabis, Ecstasy, LSD, cocaine and hallucinogenic mushrooms at least once

in their lifetime (Table 1). The majority of respondents also claimed having experimented with amphetamines, heroin and crack/freebase (Table 1). Almost all of the cannabis-smokers as well as the majority of the Ecstasy and cocaine users had used these substances within the 30 days prior to the study (Table 2).

During the last month prior to the survey, four-fifths of the population studied had used a substance intranasally, all psychoactive substances taken into account (79%, 198/250). One quarter of the surveyed population (28%, 70/250) had already used psychoactive substances by means of injection over the course of their lifetime. More than one tenth of the respondents had injected within the last 30 days (14%, 34/250).

The following section of the article will present the results of the survey concerning initiation to ketamine and frequency of use, the ways ketamine is administered, the quantities used, other substances used in addition to ketamine, the circumstances of use, the sought-after effects and those actually experienced, as well as the associated risks as perceived by the users.

Initiation to Ketamine and Frequency of Use

Ketamine was often the last substance with which participants had experimented. On average, it was used for the first time at the age of 22 (Table 1). More than one quarter (27%, 68/250) of the respondents had tried ketamine before turning 20.

According to the interviews, the most frequent motivation for justifying the first dose of ketamine was above all

TABLE 2
Frequency of Use for Main Substances Within the Last Month Prior to the Survey (N = 250)

	Users in the Last Month (N = 250)		At Least Once per Month		Several Times per Week		At Least Once per Day	
	N	%	N	%	N	%	N	%
Ketamine	77	31%	57	74%	17	22%	3	4%
Cannabis	227	91%	13	6%	21	9%	193	85%
Ecstasy	125	50%	82	66%	40	32%	3	2%
LSD (Acid)	89	36%	82	92%	7	8%	0	0%
Hallucinogenic mushrooms	72	29%	59	82%	13	18%	0	0%
Cocaine	146	58%	93	64%	50	34%	3	2%
Crack /freebase	34	14%	27	79%	6	18%	1	3%
Amphetamines (Speed)	81	32%	60	74%	20	25%	1	1%
Heroin	57	23%	35	61%	17	30%	5	9%

experiencing something new. "I had buddies around me who took it, telling me they got a real kick out of it, that it was the brand-new psychedelic drug for having a good trip and all that . . . that it was really great." (Maya, aged 28, initiated at 25). One argument cited frequently for taking ketamine for the first time was the desire to keep the party going. "We just wanted the party to keep on rolling, that's why we took some." (Florent, aged 22, initiated at 18). However, the desire to try the drug may also coexist with a certain amount of apprehension about the effects it will have. This apprehension decreases when precautionary measures are taken. "We decided to secure the place where we were going to take it, just in case we should fall. And we had put some mattresses around, had soft music playing, the works . . . I guess in the beginning all of us thought the substance was diabolical, and wondered what was gonna happen to us." (Vanessa, aged 25, initiated at 25). However, the first intake may also happen casually, as if the initiation to ketamine was an ordinary event, especially among the younger individuals. "Ket . . . that was my first party . . . I more or less knew that it was an anesthetic, I didn't really know its effects." (Célia, aged 20, initiated at 17).

The quantitative part of the study shows that, on the day the survey was carried out, two users out of 10 (19%, 47/249) restricted themselves to their first dose; some of this group were positive about not renewing that experience (53%, 25/47). Four users out of 10 (40%, 100/249) claimed having taken ketamine between two and nine times during their lifetime, and four out of 10 had used the substance ten times or more during their lifetime (41%, 102/249). Some specifics can be observed with this latter group compared with other ketamine users. They are more likely to be males (OR = 2.3), living alone (OR = 1.9), in precarious living conditions (OR = 2.0), with neither job nor unemployment benefits (OR = 1.9), and to have attended more than 10 techno festivals in their lifetime (OR = 3.7) (Table 3).

Within the last 30 days prior to the survey, one third of the respondents had used ketamine at least once (31%, 77/250). A minority of them (8%, 20/250) claimed to have

consumed the substance at least several times per week, which represented 26% of active users in the last month (Table 2).

Ketamine Routes of Administration

Among the participants in the quantitative part of the study, ketamine was essentially taken intranasally during the previous month (99%, 76/77). However, it could also have been smoked (9%, 7/77), ingested (3%, 2/77) or injected (3%, 2/77). At the time of the last use, the intranasal route was predominant (92%, 231/250) and other routes remained marginal.

Amounts of Ketamine Consumed and Characteristics of the Available Substance

The powerful effects of the substance when taken for the first time, combined with a high tolerance when used repeatedly, led users to begin by snorting a very small quantity ("a trace") in order to quickly increase the doses administered in one intake. Depending on the effects sought after, the dose "is handled by the millimeter" (according to the focus group), especially at the time of the first doses. Since the effects do not last long, ketamine is consumed like cocaine—in a session including multiple doses. Among the users able to afford to use several times per day, a four to five gram intake per day can be reached after a few days of a sustained use, yet a daily one to two gram use pattern seems more common. Nevertheless, two of the individually interviewed users, who took one or two grams per day at the time of their daily intake, claimed having been able to reach an intake of eight to 10 grams in 24 hours, or 15 to 20 grams during one party respectively.

Ketamine is available as ready-to-snort powder as well as crystals, yet it is usually bought in fluid form and home-made (processed by the user). It is a liquid "like water", "it's translucent", and "it bubbles" (focus group). It can "smell like roses" or be odorless. The fluid is then transformed into powder by heating it in a double boiler for about half an hour, in a microwave oven, or directly in a saucepan, in

TABLE 3
Factors Associated with Using Ketamine More or Less than 10 Times on Average in a Lifetime (N = 249)

	Less Than 10 K Doses During One's Lifetime (N = 147)		10 K Doses or More During One's Lifetime (N = 102)		Univariate Odds Ratio	P
	N	%	N	%	OR	IC 95%
10 techno festivals or less	104	72%	40	28%	1	$p < 0.001$
More than 10 techno festivals in a lifetime	43	41%	62	59%	3.7	
Post-secondary studies	65	73%	24	27%	1	$p < 0.001$
No post-secondary studies	82	51%	78	49%	2.6	
Females	63	71%	25	29%	1	$p < 0.01$
Males	84	52%	77	48%	2.3	
Stable home	111	64%	62	36%	1	$p = 0.013$
Precarious home	36	47%	40	53%	2.0	
Job	97	65%	52	35%	1	$p = 0.018$
No job or UI benefits	50	50%	50	50%	1.9	
Not living alone	121	63%	72	37%	1	$p = 0.029$
Living alone	26	46%	30	54%	1.9	

which case it is dubbed "trash version" (focus group). The ketamine users buy rarely comes in an airtight vial bearing an industrial trademark. They must have a "nurse friend" (focus group), since a structured trafficking scheme with vials produced directly by pharmaceutical laboratories does not seem to exist in France. Ketalar® (the most famous pharmaceutical version) was mentioned by regular users, yet all of them agreed that the ketamine most often used in order to get "stoned" came from India. It is impossible to know the concentration of the substance bought, only "the guy who went to India to get it" knows or "the one who got hold of it in England" (focus group).

Psychoactive Substances Associated with Ketamine

The different combinations of psychoactive substances with ketamine were characterized throughout the quantitative survey according to the time of use (before, during, or after) in relation to the last ketamine dose (Table 4). Intake in combination with another substance was very frequent (96% before, 75% during, 86% after). Alcohol and cannabis were the substances most commonly used in the three periods mentioned. In addition to these, stimulants and hallucinogens were the main substances consumed before taking ketamine (primarily Ecstasy, but also amphetamines, LSD and cocaine) (Table 4).

According to the users, alcohol is often combined with ketamine, "cause it works better" (focus group), "it gives a boost to the K effect" (Célia, aged 24). Specific combinations can be made in order to get a particular effect, as with "Calvin Klein" (a cocaine-ketamine combination), "Calvin

Klein Special" (a mixture of cocaine, ketamine and speed/amphetamines), and combinations of ketamine and amphetamines or ketamine and Ecstasy (focus group). The main purpose of such combinations is to get the hallucinogenic and inhibition-freeing quality of ketamine while eliminating the anaesthetizing effects. "Ket and speed are great, 'cause you benefit from the distortion effect and the euphoria in a rush . . . you got things bursting out in your whole head; too much fun!" (Sam, aged 21).

Circumstances of Ketamine Use

The last dose of ketamine was most often taken in a private home setting (35%, 88/250), or in a squat (6%, 15/250), at a free-party (23%, 57/250), a techno festival (14%, 36/250), a rave party (5%, 12/250), or a club venue, e.g. discotheque, nightclub, bar, (5%, 12/250).

The circumstances of use varied depending on whether consumption was random or regular. The qualitative data reveals that first-time or random consumption mainly took place in a party atmosphere. "It's true that we must have begun with Ket through the free-party scene" (Sophie, aged 25). "Techno festival—enter ketamine" (Marc, aged 23). Some individuals characterized by repeated use maintained that ketamine is used "everywhere," "wherever you want, whenever you want"; "full of K, I would go to school" said a focus group participant. "We took some during the breaks at school" (Célia, aged 20). Nevertheless, most of them believe use should be restricted to some private place within a safe realm, because "it's not that nice," "that just won't do" unless the user perfectly knows his/her own tolerance

TABLE 4
Psychoactive Substances Combined With Ketamine at Time of Last Intake (N = 250)

	Before Intake N = 250		During Intake N = 250		After Intake N = 250	
	N	%	N	%	N	%
No substance	10	4%	63	25%	35	14%
Alcohol	187	75%	102	41%	101	40%
Cannabis	216	86%	165	66%	193	77%
MDMA (Ecstasy)	75	30%	7	3%	13	5%
LSD	42	17%	10	4%	11	4%
Hallucinogenic mushrooms	15	6%	6	2%	6	2%
Nitrogen Protoxyde	7	3%	8	3%	3	1%
GHB	0	0%	1	0%	2	1%
Amphetamines	45	18%	17	7%	17	7%
Cocaine	41	16%	21	8%	23	9%
Freebase – Crack	4	2%	2	1%	1	0%
Heroin	16	6%	11	4%	26	10%
Opium and rachacha (a poppy derivative)	7	3%	4	2%	18	7%
Opiate medicines	6	2%	0	0%	4	2%
Hypnotic medicines	5	2%	0	0%	5	2%
Poppers	0	0%	1	0%	1	0%

to the substance: “in a place where you know you gotta stay standing, you’d better take small amounts at a time” (focus group). Some regular users reported having used alone.

In fact, among the users who participated in the quantitative survey, more than one fourth (27%, 68/249) had already used ketamine by themselves at least once in their lifetime. Males were more likely to have used by themselves than females (32%, 52/161 vs. 18%, 16/88; $p = 0.0169$).

The group of respondents who had injected at least once in their lifetime also included more individuals who had already tried ketamine while by themselves compared to those who had not injected (43%, 30/70 vs. 21%, 38/179; $p = 0.0006$).

Ketamine Effects According to Users

The focus groups pointed out the fact that the effects of ketamine are perceived differently depending on the dosage, the route of administration, whether intake occurs alone or in a group, and whether it takes place after having eaten or not. They also vary according to the circumstances of use (e.g., at home or with 2,000 individuals in front of a wall of loudspeakers). The effects do not last long: two hours maximum, or as little as 15 minutes. Intravenous administration enables a five-minute “flash” (focus group).

The effects experienced, those deliberately sought after, as well as the undesirable effects were researched in both parts of the survey. The qualitative part made it clear that the users do not necessarily obtain the effects they are looking for. Many of them claimed that they are unable to control or only very poorly control what they get. Others compared the quest for a particular result to a lottery game. However, several individuals stressed the fact that knowing the effects

lets them master the substance, which helps them obtain the effects they want.

Effects experienced and effects sought after. The predominant sensations experienced were described as follows: anesthesia and the loss of one’s senses (72%, 179/250) and hallucinations (64%, 160/250). Nearly half of the group declared having had an out-of-body experience (47%, 117/250). One third of the respondents also reported having felt stimulated and euphoric (34%, 84/250), a loss of consciousness and a sense of oblivion (33%, 83/250), as well as introspection (32%, 81/250). Although anesthesia and the loss of one’s senses were common effects experienced, they were not often sought after, as only 26% (62/234) claimed having used ketamine for that purpose. For the majority of users, the purpose of taking ketamine was to produce hallucinations (55%, 129/234). The sought-after effects also included an out-of-body experience (39%, 91/234), stimulation (28%, 66/234) and introspection (27%, 63/234). One fifth tried to control the effects produced by other substances by taking ketamine (a substance “to get down”: 19%, 44/234). Individuals seeking hallucinations, as well as those searching for an out-of-body experience differed significantly from the others, specifically in terms of the characteristics of their ketamine use. They ran a three times greater risk of repeating ketamine consumption after their first time, and of claiming that they would perhaps or certainly use the substance again in the future (Tables 5 and 6).

The effects experienced were described as unlike any other type already experienced (“it’s really a substance apart”). However, heroin and LSD were the two substances mentioned most often in an attempt to describe the effects

TABLE 5
Factors Associated with a Quest/No Quest for Hallucinations during Ketamine (K) Intake (N = 250)

	No Quest For Hallucinations (N = 121)		Quest For Hallucinations (N = 129)		Univariate Odds Ratio	P
	N	%	N	%	OR	CI 95%
Less than 10 K doses in a lifetime	89	61%	58	39%	1	$p < 0.001$
10 K doses or more in a lifetime	32	31%	70	69%	3.4	
I certainly won't take K again	40	68%	19	32%	1	$p < 0.001$
Yes, I will or might take it again	81	43%	109	57%	2.8	
One dose in a lifetime	32	68%	15	32%	1	$p < 0.01$
More than one dose in a lifetime	89	44%	114	56%	2.7	
Never taken K while alone	98	54%	83	46%	1	$p < 0.01$
At least one dose while alone	22	32%	46	68%	2.5	
10 techno festivals or less	80	56%	64	44%	1	$p < 0.01$
More than 10 techno festivals in lifetime	41	39%	65	61%	2.0	
First K dose at age 22 or older	73	56%	58	44%	1	$p = 0.0215$
First K dose at age 21 or younger	48	40%	71	60%	1.9	

experienced. From a recreational perspective, or the “game” of an altered perception of the surroundings, ketamine was most often compared to LSD, whereas heroin was referred to in order to describe a kind of disconnection from everyday life and withdrawal into oneself. The substance was described as “heroin psyche” and “modern heroin” (focus group). In the group discussions in particular, ketamine users described the effects they experienced as a step-by-step process. The first step is anesthesia, the second hallucinations, and the last is a loss of consciousness associated with an introspective journey, of which the K-Hole and the out-of-body sensation are the ultimate expression. (The “K-Hole” is the expression used to describe the “black hole”—loss of consciousness, loss of the sense of time and space—that can be caused by the intake of ketamine.)

Most of the time, getting high with the substance caused the user to remain still for the first thirty minutes. This is the “dispersion” period. Some people can be in motion during “dispersion” if they want, but this phase can also be characterized by physical and motor disability (depending on tolerance, dosing, morphology, etc.). “The more you get used to it, the better you can cope.” However, all respondents agreed that “it has no speeding effect. Usually you’re physically disabled” and you walk like “a robot” (focus group). This anaesthetizing effect was considered as such: “It makes you feel limp” and gives the sensation of being “in cotton”, as if you were “floating around” (focus group). It is a bit “like walking on the moon without touching the ground” (Marc, aged 33). This sensation was also labeled “intoxicating” and compared to the effects of alcohol. For

addicted users, the first anaesthetizing step helps them cope with their social responsibilities, such as going to work. For others, such an effect may be the one they are mainly looking for in a partying context. “We laugh, totter”; “it can be managed in a group”. “In small doses, it can be mutual fun” (focus group).

Progression to the next steps can happen violently with the first “trace” or gradually by taking subsequent doses. The more you take, the more you “disconnect”; little by little you lose “your center of gravity.” Then come the hallucinogenic effects, which lead to introspective withdrawal, the “shutting down into one’s body.” “It’s a super-lonely condition”; it allows one to “withdraw oneself from the world” (focus group). Some respondents claimed that the same steps are gradually gone through while coming down as while getting high. There is slight stimulation at the beginning, which is experienced when coming back down. The more of the substance consumed over a long period, the longer each step will last (focus group).

Such a step-by-step process is accompanied by dissociative effects that are described as transversal because they are perceived at each step. They are felt physically, even with “small doses”. Respondents claimed that “the entire bodily pattern is altered.” These dissociating effects produce a “not so graceful Robocop” gait, which are compensated for by “fluidity when it comes to how you feel your body” and a feeling that “gravity becomes a somewhat shifted notion” (focus group). This idea of a shift was also mentioned several times to describe different hallucinations. “I had the impression that time shifted about one second ahead, as if I knew

TABLE 6
Factors Associated with a Quest/No Quest for Out-of-Body Experience during Ketamine (K) Intake (N = 250)

	No Quest For Out-of-Body Experience (N = 159)		Quest For Out-of-Body Experience (N = 91)		Univariate Odds Ratio OR	P CI 95%
	N	%	N	%		
One K dose in a lifetime	39	83%	8	17%	1	<i>P</i> < 0.01
More than one K dose in a lifetime	120	59%	83	41%	3.4	
I certainly won't take K again	48	81%	11	19%	1	<i>P</i> < 0.01
Yes, I will or might take it again	110	58%	80	42%	3.2	
Less than 10 K doses in a lifetime	106	72%	41	28%	1	<i>P</i> < 0.001
10 K doses or more in a lifetime	52	51%	50	49%	2.5	
No cocaine in last month	74	71%	30	29%	1	<i>P</i> = 0.036
At least one cocaine dose that month	85	58%	61	42%	1.8	
No LSD in last month	109	68%	51	32%	1	<i>P</i> = 0.040
At least one LSD dose that month	49	55%	40	45%	1.7	

all that was being said . . . It didn't last long; I found it a bit scary." The sense of time and space is totally disturbed by the dissociating effects of the substance. "The connections between space and time, the messages . . . aren't treated the same way" (focus group).

The entire range of the reasons for taking ketamine reported by the respondents was similar to the sought-after effects mentioned in the quantitative survey, except for the out-of-body sensation, which was described as an effect more often endured than actually sought.

The quest for hallucinations was mainly evoked in terms of play. It was often associated with a simultaneous desire to lose one's inhibitions. "For my part, I sort of like to have one foot in reality and the other in a parallel world, being astride like that, just being able to play with both" (Magali, aged 20). "We would often laugh about it, saying you gotta have sea-legs sort of, 'cause everything is reeling around you. . . . For me, it remains something very playful, full of fun, quite amusing and made for enjoying yourself" (Frédéric, aged 30). "I didn't stop laughing all night long, throughout the party, I was in a party atmosphere, so I had great fun" (Bruce, aged 31).

The mood-altering properties (stimulating oneself or, conversely, chilling out, anaesthetizing oneself) of the substance mentioned in the qualitative survey were also associated with "detaching" or "regenerating" oneself. "The moment you begin to detach from your physical sensations and all, then you got a sort of feeling of lightness, of floating around a bit, and you sort of calm down, you chill out and feel euphoric at the same time" (Linda, aged 25). The substance helps in problem solving, "it's got a tidying up effect" (focus group).

In relation to the quest for introspection ketamine was characterized as functioning as a vehicle that, as with other

hallucinogenic substances, permitted meditation and a kind of transience of the "hidden dimensions" of oneself and the world. "A discovery of oneself, sort of . . . well, for me at least . . . it doesn't happen that way for everyone . . . for me, it's a vision of the world that you don't necessarily have when you're normal. . . . it opens doors to a reality you wouldn't see otherwise" (Eloïse, aged 22). "Ketamine puts you face to face with your own self" (focus group).

Regulating the effects of another substance was a reason for taking the drug (mainly described in the qualitative data), as if ketamine permitted a transition period that made returning to everyday life easier and allowed the fun and excitement to come to a gradual end. "Personally, it's more a substance that can help me calm down . . . let's say after a big party week . . . yeah, spending a day or a night or a weekend taking ketamine and a bit of opiates just to really wind down, you know . . . for a change, you know . . . but keeping the party moving in your head with hallucinations actually" (Yann, aged 25). "It's the kind of substance that's good to take at the end of a party, when you got nothing more to say to each other. . . . Well, you stop communicating . . . so, stop talking, start ketamine" (Marc, aged 33). As in the quantitative study (Table 4), the users most often mentioned use while coming down from stimulants, particularly crack, since ketamine cuts off the irrepressible craving for more. However, ketamine is also used to boost other hallucinogenic substances: "A touch of Ket" when coming down from LSD, and "you get 10 times higher" (focus group).

The quest for an out-of-body experience was rarely described as a reason for taking the substance, rather more as an effect that had to be endured. "When you go astral, that's when you get a huge slap in the face!" (focus group). According to the individuals who had gone through it, the experience depended upon the surrounding stimuli (a place

full of people and noise would be less favorable than a quiet atmosphere) and the dose taken. It could be described as the quest for a motionless journey. "Ket, it really helps you to switch universes . . . if I take it, it's for taking a trip, sitting down in the couch for my journey and then getting a change of scenery" (Philippe, aged 26). "It really is a journey, another dimension entirely. You really live something, you know"; it is "the fourth dimension" (focus group). Some respondents reported feeling "super-great" and "totally untroubled" (focus group) while floating outside of their own bodies. However, a slight feeling of anxiety was often present in discussions about this type of experience, without being labeled as such, as if the anaesthetizing effect would conceal the distressing character of the experience. "The small amount of fear I get when I take Ket is telling myself I want to get outside my body to know how it feels, but I'm afraid I won't be able to get back in, a borderline impression, actually . . . telling myself I'm playing with fire, with the unconscious, stuff like that . . . but at the same time, will the process be able to be reversed?" (Vanessa, aged 25).

The "K-Hole" was then often depicted by the image of exiting one's own body. However, it was also often associated with a morbid feeling: "you often end up thinking about death" (Linda, aged 25), "having gloomy thoughts," "every high dose boils down to it, lots of people would say . . . First, I was dead then I went to another level actually . . . I was made of wood, I was a bench" (focus group). "Ket, in fact, the way I take it taking big traces, actually we talk a lot about it with a bunch of buddies, it's a bit like a death experience . . . as if your body were dead, and then you . . . you leave it. . . . By the way, when you take lots of Ket you're cold afterwards; many times I found myself cold . . . then you take cover under a hot shower to warm up" (Sam, aged 21).

Undesirable effects. About one third of the individuals surveyed claimed to have fainted at least once during ketamine intake (32%, 81/250). Among these, some even reported feeling dizzy several times (38%, 31/81). The main occurrences reported by those who suffered fainting spells are the following: loss of one's senses (53%, 42/79), nausea and vomiting (51%, 40/79), inability to communicate (47%, 37/79), anxiety and distress (30%, 24/79) and blackouts and comas (24%, 19/79). However, such dizzy feelings only rarely implied medical intervention (9%, 7/78). Those who had hallucinations while taking ketamine were more likely than the others to have experienced at least one loss of consciousness during intake (41%, 65/160 vs. 18%, 16/90; $p = 0.0002$).

The group discussions especially pointed out the "comas": "Now when I'm told the word ketamine, it's not that I wanna spoil the fun but it makes me think of a heart failure" (focus group). In the qualitative study, the social and physical consequences in everyday life were reported more often than the collapses after taking the substance. The confirmed users mentioned morbid ideas, distress ("I feel low-spirited")

and a depressing feeling that surfaced between doses. "The day I take it there'll be no problem, but the day after, I'll have minor discomforts, I'll ask myself where I . . . what I'm doing . . . Why did I have to get that stoned . . . Should I continue my studies or . . . Or I'll go to London to clear my head, you know . . . Whatever" (focus group).

From a somatic point of view, the undesirable effects most frequently mentioned were stomach aches and nausea: "In that respect, it might feel a bit like the effects of alcohol, but for my part, it makes me puke, it ruins my stomach" (focus group). The individuals who experienced daily ketamine consumption over several months also pointed out weight loss, joint pains and gingivitis as effects. Lastly, regular users regretted the influence their consumption had on their memory.

Risks Connected With Ketamine Use According to Users

In the qualitative study, the risks perceived by users about their own ketamine use are mainly of a social or psychosocial nature, followed by the risks due to more objective elements, above all in relation to the inability to defend oneself or feel pain.

The risk of losing touch with one's close circle of friends and family and withdrawing into oneself was perceived as a major danger. It has its source in the ketamine "bubble effect," which is comparable to that of heroin. Users of drugs other than ketamine who were part of the respondents' circle considered ketamine use to be "a step not to go through," and "even occasional" use led them to state, "You get stoned too often" (focus group).

The psychological risks that users attributed to ketamine use were linked to the possibility of "losing control over oneself." It is a substance that can generate anxiety as well as obsessive behavior. The manifestation of such symptoms was believed to depend upon individual psychological conditions (focus group). Hallucinatory troubles, as well as disorientation, depressive symptoms, and memory troubles were especially mentioned.

The risks related to the inability to react in case of emergency (assault, rape or domestic accident) and to hurting oneself unawares were often reported by the respondents. These risks were regarded as major and prevailed over the others, depending on the individuals who cited them.

A minority of respondents cited the risk of "turning to injection," since snorting ketamine regularly proves difficult. "It's stupid that injection should be . . . so risky, . . . 'cause it's screwing your nose . . . it's a substance that burns your nose, your sinuses, and there's a point when you still want to take some but your nose can't take any more" (focus group).

Awareness of these risks does not necessarily entail putting an end to use. In this case, a personal assessment of the "risks calculation" may help to combine the best conditions to allow for safer use.

DISCUSSION

An examination of the results shows two social profiles characterizing the ketamine users interviewed. The predominant typical profile is of a male, with little post-secondary education living in precarious conditions or having limited means. He is often young (under 24) but when older, the risks are higher that he has taken drugs by means of injection sometime during his lifetime. The frequency of his drug consumption, all substances included, is often several times per week or daily. The second typical profile could be either a male or a female, most likely a post-secondary graduate, who uses psychoactive substances on a regular basis (most often every weekend). Before their first ketamine intake, the surveyed individuals had generally already tested various psychoactive substances, mainly stimulants and hallucinogens. After initiation, repeated consumption more often applies to males, individuals with little or no post-secondary education and those in precarious living conditions.

One of the major contributions of this study is to describe the nonmedical use of ketamine in France as a practice performed within populations of users who are often in precarious situations (jobless and even without stable accommodation). Another recent study carried out in Australia based on a sample of 100 ketamine users depicts the typical user of the substance as a well-educated and well-off individual (Dillon, Copeland & Jansen 2003). However, in our research as in the Australian study, the selection of respondents using the snowball sampling method may have biased data representativeness. In our research, such a bias could be limited by the variety of urban sites in which the data was collected (six cities) and by the diversity of entries concerning the targeted public. (Those connected with the techno clubbing scene primarily consist of informal contacts in different networks linked to this scene. However, contacts also included those provided by prevention organizations within the clubbing scene and self-support groups, as well as those made directly at a rave party, a free-party, in club venues and in electronic music shops).

The analysis of the frequency of ketamine use in the surveyed group shows that consumption rates of at least several times per week do exist (26% of the users in the last month), but for the great majority of the individuals surveyed, ketamine is not the most-used substance. It is

most often used by polydrug users. The ketamine users encountered in this study use alcohol, cannabis, Ecstasy and cocaine more often than ketamine. Among these polydrug users, the frequency of ketamine use appears relatively similar to that of other major hallucinogens, such as LSD and hallucinogenic mushrooms.

Moreover, ketamine is considered by some individuals to be a "handy" substitute for LSD, since its effects are much shorter. Others regard it as a default substitute because LSD availability varies. The reasons for taking ketamine are numerous, but the quest for hallucinations appears to be the main effect both sought after and experienced. Moreover, the individuals seeking hallucinations are more likely than the others to repeat intake of the substance. The anaesthetizing effect is more often experienced than sought after, but it may in large part be the effect that explains consumption that occurs at least several times per week.

The combination of the effects sought after by ketamine users and their own perception of the correlated risks argues in favor of the prevention of the abuse of ketamine. This could be more widely included in a well-reasoned policy to prevent the use of the major hallucinogens (LSD, hallucinogenic mushrooms or plants, ketamine) and anesthetics (ketamine, GHB).

These prevention discussions should be based on the main concepts concerning the consequences of losing one's self-control, the psychiatric risks, the dangers linked to chemical dependence (rapes, assaults, domestic accidents, etc.) and the social seclusion of regular users. Naturally, the harmful effects specific to each substance should not be evaded. As far as ketamine is concerned, information about the distinction between the immediate negative effects and the possible irreversible effects on memory (Morgan, Monaghan & Curran 2004) is an interesting subject, since regular users themselves report suffering from this problem. Finally, it must be pointed out that the social sciences such as anthropology, sociology and psychology would clearly favor the development of an enlightened prevention plan concerning the use of the major hallucinogens, while pondering the notion of "play" often associated with this type of substance use, which would be to the detriment of other concepts that have traditionally been attributed to them in the psychedelic culture, such as introspection or opening the "gates of perception."

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