

Alcoholic Blackout for Criminally Relevant Behavior

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Some criminal suspects claim to have had an alcohol-induced blackout during crimes they have committed. Are alcoholic blackouts a frequently occurring phenomenon, or are they merely used as an excuse to minimize responsibility? Frequency and type of blackout were surveyed retrospectively in two healthy samples ($n = 256$ and $n = 100$). Also, a comparison of blood alcohol concentrations was made between people who did and those who did not claim a blackout when stopped in a traffic-control study ($n = 100$). In the two survey studies, blackouts were reported frequently by the person himself (or herself) and others (67% and 76%, respectively) in contrast to the traffic-control study (14%), in which blackouts were reported only when persons were involved in an accident. These results indicate that although blackouts during serious misbehavior are reported outside the court, both the denial and the claim of alcoholic blackout may serve a strategic function.

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The following vignette is based on a real case.

Amsterdam, 1999. A 30-year-old man consumed a considerable amount of alcohol in a bar and then decided to drive home. After he was stopped by the police for suspicious driving behavior, he turned off the car lights and fled. While exceeding the maximum speed limit, he hit and killed three bicyclers who were on their way home after a night out. Afterward, the defendant claimed that he had no memory of the tragic accident. The judge ruled that “by drinking and driving, the defendant deliberately accepted the chance that his driving behavior could lead to the death of the aforementioned bicyclers. . .” and found the defendant guilty of manslaughter. He was sentenced to seven years in prison.¹

Both in the United States and The Netherlands, on average, 20 to 30 percent of offenders claim a

form of amnesia after committing a crime.^{2,3} In a substantial number of these cases, defendants invoke excessive alcohol consumption as an explanation for the amnesia.^{3–5} For example, Bourget and Bradford⁵ found that 80 percent of their sample of sex offenders who claimed amnesia reported to be intoxicated during the crime. In a study by Cima and colleagues,⁴ this percentage was 24 percent. Other studies have reported percentages in the range of 30 to 40 percent (for a review, see Kopelman⁶). Many defendants who say that they were intoxicated during the commission of a crime do indeed have a history of problems with alcohol.^{7–9} However, claiming an alcohol-induced blackout may also be an attractive strategy for minimizing legal responsibility for criminal behavior.¹⁰

An alcoholic blackout causes a form of amnesia about events that happened during a period of heavy drinking.¹¹ The consumption of large amounts of alcohol may induce a so-called dissociative state. Dissociation is defined as a disruption of the normally integrated functions of consciousness, memory, identity, and motor behavior, that does not necessarily cloud one’s consciousness.¹² During the blackout, the person is awake and conscious, may be engaged in any type of activity or conversation, and may appear to the observer to be perfectly oriented.¹³ Memory loss caused by

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blackout may be extensive, but it is not always irreversible. Thus, sometimes the event is recalled later, either spontaneously or when alluded to by someone else.

For a long time, alcohol-induced blackouts were merely studied as predictors of future alcoholism. Several studies have suggested that the occurrence of blackout may be an early diagnostic sign of alcoholism.^{11,14} However, surveys indicate that not only alcoholics, but also undergraduate students report blackouts on a nontrivial scale. It appears that approximately 25 percent of healthy college students report being familiar with alcoholic blackouts.^{11,15,16} In the e-mail survey among American college students conducted by White *et al.*,¹⁶ 51 percent of the students reported that they had had at least one blackout. Blackouts were reported during such activities as spending money (27%), sexual conduct (24%), fighting (16%), vandalism (16%), unprotected intercourse (6%), and driving a car (3%). Thus, a significant percentage of students were engaged in a range of potentially hazardous activities during blackouts. Also, these blackouts were associated with lower academic grade-point averages and other indicators of problem drinking. Although some types of deviant behavior were reported, the emphasis in the study by White *et al.* was on blackouts as a predictor of the college student's health in college and future alcoholism.

Two biological mechanisms may underlie alcoholic blackout. The first focuses on an encoding deficit. The active substance of alcohol, ethanol, is known to inhibit temporarily the biochemical brain processes that are necessary to form new memory traces.^{13,17}

The other mechanism emphasizes state-dependent retrieval deficits.^{11,18} Information stored in memory during an intoxicated state would be inaccessible when sober.¹⁹⁻²¹

Ethanol affects not only memory, but also the activity of neurons involved in motor coordination, behavioral inhibition, and consciousness.^{13,22} At high blood alcohol concentrations (BACs), this effect is manifested in such symptoms as slurred speech and shaky legs, which raises the question of whether a person who is so drunk that his or her memory does not function appropriately is physically able to perform complex motor actions needed for criminal behavior.²³ According to Kalant, such complex actions seem impossible: "The typical action of alcohol on the brain. . . is to progressively decrease all types of

nerve cell activity, including those involved in coordinated movements and those involved in consciousness and memory, more or less *in parallel*" (emphasis added) (Ref. 13, p 368). According to this view, it is highly unlikely that a person can experience a blackout during complex behavior such as robbery, murder, or rape.

Apart from biological mechanisms, attribution and expectancy effects may play an important role in blackout reports. Inappropriate or embarrassing behavior could be excused by blaming it on alcohol intoxication. Expectancies about alcohol may contribute to the behavioral effects of alcohol, and even induce a self-fulfilling prophecy.^{22,24,25} Studies have shown that young adults who have experienced blackouts have more positive expectancies,²⁶ but also experience more detrimental effects of future alcohol consumption on memory than people who have had no experience with blackouts.²⁷ This suggests that blackout experiences shape future expectancies about alcohol, which in turn may affect how attention and effort are allocated in retrieving memories of events stored during alcohol intoxication.

Some investigators have described cases in which alcohol-induced blackouts are related to loss of criminal intent or automatic behavior.^{13,28} This issue received much attention in the Canadian court case *R v. Daviault*,²⁹ in which the Supreme Court decided that a defendant, who claimed to have no memory of his crime because of alcohol intoxication, should be acquitted. This decision was based on expert testimony that linked automatism to blackout. In Dutch courts, such an acquittal would be inconceivable because of the *culpa in causa* doctrine in Dutch criminal law. According to this doctrine, the suspect is expected to know the consequences of excessive alcohol use and thus is held fully responsible for his or her behavior while under the influence. Although alcohol impairs short-term memory, which may interfere with storing information about ongoing behavior, remote memory remains intact.^{11,17,22} Thus, even during a blackout, a person should be perfectly able to retrieve rules of conduct, and be aware that what he is about to do is wrong.

With these considerations in mind, we wondered to what extent alcoholic blackouts are reported outside the court. If they are, what categories of action memory (i.e., memory of behavioral acts) are undermined by blackouts? Is it possible to engage in complex activities while under the influence of alcohol

and, later on, have no recollection of it? Do defendants who say that they completely forgot their complex criminal behavior raise a plausible claim? Or are blackout reports merely a convenient but highly specific way to minimize responsibility for criminal behavior? Perhaps they represent a widespread, expectancy-based attribution of deviant behavior. If the latter is true, blackouts during such deviant behavior should be common in the general population. In that case, it would be interesting to learn how much alcohol people report having consumed before a blackout occurred. To explore these questions, we administered a questionnaire about alcohol consumption and blackout experiences to a community sample.

Study 1: Survey of Healthy Subjects

Method

A questionnaire was distributed among 178 women and 78 men aged 18 to 82 years. The study was approved by the standing ethics committee (Ethische Commissie Psychologie; ECP) of the faculty of Psychology of Maastricht University. To obtain a mixed sample of heterogeneous groups, our respondents were university students and visitors to a public library. By recruiting individuals in these settings and age ranges, we made sure that we had a sample in which illiteracy and very low IQ did not play a role. Undergraduate students were asked during classes to fill out a 12-item questionnaire that would take approximately 10 minutes. Library visitors were asked during their visits whether they were willing to complete the questionnaire. Note that The Netherlands is the European country with the highest rate of library subscriptions, with 275 per 1000 inhabitants being a member of the community library.

Respondents were asked about their drinking behavior (i.e., number of times a month they drank more than five alcoholic beverages per occasion) and the number of blackouts experienced. Blackouts were defined as: "a failure to remember (parts of) events that happened while you were drinking alcohol." When respondents indicated that they had experienced a blackout, they were asked about the details of the situation. They were asked about their physical condition, drug use, and eating before the blackout. Other questions were about the number of drinks, time frame within which the drinking took place, and body weight. Information about body weight was needed to calculate estimated BAC. A

drink was defined as a standard glass of beer, wine, or spirits. A bottle of beer contains 1.5 glasses. BAC calculations served as a rough indicator of the BAC that accompanied the reported blackouts, but, of course, they are highly dependent on subjective estimates of drinking behavior. Mean BACs were calculated using the following formula: $(\text{number of drinks} \times 10 \text{ grams}) / (\text{body weight} \times \text{gender}) - (\text{consumption time} \times 0.15)$. The constant of 0.15 is an index for breakdown speed. The constants for gender were 0.66 and 0.72 for women and men, respectively.³⁰ The definition of a standard drink varies substantially among countries.³¹ The Dutch standard is 10 grams of alcohol per drink. (Note that according to the Dutch Vehicle and Traffic Law, persons are legally intoxicated at BACs of 50 mg/100 mL or more.)

Respondents were also asked about the types of events they later found out had occurred during the blackout and about the duration of the blackout. Finally, respondents were asked whether the memory of events had returned later, and if so, whether the memory-recovery occurred spontaneously or when others told them about events during the blackout. When forgotten events could not be remembered afterward, neither cued nor spontaneously, the blackout was considered to have been irreversible.

Blackout and nonblackout groups were compared for interval data using two-tailed independent samples *t* tests, with *p* set at $\leq .05$.

Results

Forty-four of the 256 (17%) respondents never drank alcohol. These respondents were excluded from further analyses. The remaining group of 212 respondents consisted of 138 women and 74 men. Mean age was 25 years (*SD* = 11). Sixty-seven percent of this group (142 people, 84 women) reported having had at least one blackout in their lives. The average number of drinks consumed before blackout occurred was 15 within a mean time frame of 4 hours. The corresponding BAC estimate was 260 mg/100 mL (*SD* = 130). Twenty-two percent of the respondents used drugs or had not eaten on the day of the blackout, which may have contributed to the occurrence of the blackout. However, in the large majority (78%), these circumstances did not play a role.

Fourteen respondents failed to indicate the number of drinks consumed before the blackout. In the blackout group (*n* = 142), men reported drinking

more often ($t_{(140)} = 2.26, p < .05$) and reported consuming more drinks ($t_{(126)} = 5.63, p < .05$) than did women. On average, men reported drinking six times a month, with 19 drinks per occasion, reaching an average BAC of 300 mg/100 mL. Women reported drinking four times a month, with an average of 12 drinks per occasion, reaching an average BAC of 230 mg/100 mL, which suggests that women are more sensitive to blackouts and experience blackouts at lower BACs than men.

The duration of blackouts ranged from 15 minutes to one hour. When asked about the types of events during which blackout occurred, the participants reported forgetting the following events most frequently: speaking to person(s) (23%), going somewhere (31%), falling (10%), or embarrassing themselves or others (13%). Fifteen percent of the blackouts concerned more serious and criminally relevant behavior such as misconduct, fights, arguments, or vandalism. Such deviant behavior was reported by 22 percent of the respondents. Corresponding mean BACs in this group were 288 mg/100 mL.

When asked if and how the memories returned, 46 percent answered that the memory of forgotten events returned spontaneously. Fifty-three percent reported that their memories returned when others told them about their behavior. Of note, 34 percent of the respondents said that their memories did not return at all. Twenty-three percent of these respondents said that they knew that the total blackout pertained to criminally relevant behavior.

When the drinking pattern of respondents reporting blackouts was compared with that of respondents who never had had a blackout, it appeared that the latter group drank less frequently: $t_{(210)} = 2.94, p < .001$. More specifically, the blackout group drank, on average, five (SD = 4.3) occasions a month, more than the criterion that is used for binge drinking.³² The group without blackouts drank an average of three times a month (SD = 2.7).

To sum up, blackouts were frequently reported in a Dutch general population sample. Our data also show that in a minority (15%), blackouts pertained to criminally relevant behavior, including arguments, misconduct, fights, and vandalism. However, there is the possibility that this is an underestimation of the true base rate of blackouts during criminally relevant behavior. After all, respondents may be reluctant to report the true nature of their blackouts because it concerns themselves. We expected that

types of blackouts would be reported in a more straightforward fashion, when they concerned others. Therefore we conducted a second survey.

Study 2: Survey of Healthy Subjects

Method

A short questionnaire was distributed among another 100 respondents (20 men, 80 women; mean age, 21.0 years). The survey was approved by the standing ethics committee (Ethische Commissie Psychologie; ECP) of the Faculty of Psychology of Maastricht University, The Netherlands. Again, respondents were recruited from the general population by asking students and visitors of a public library to complete the questionnaire. In this 12-item questionnaire, respondents were asked about blackouts they had witnessed in friends or acquaintances. They were asked whether it had ever happened to them "that they were with a friend who could not remember (parts of) events that happened to this friend when this friend had been drinking." If they were familiar with this type of experience, they were asked to give an estimate of the number of drinks that this friend had consumed before the blackout. Finally, they were asked what types of behavior occurred during the blackout and whether the friend's memory returned after he or she was told about the details of the event. As for the behavior for which blackout was claimed, the following options were given: hurting someone, an argument, a fight, vandalism, misbehavior, falling, embarrassing oneself or others, kissing, car driving, or other. The reason we selected these options was that we were primarily interested in potentially criminally relevant behavior. Respondents could select "other" only when they had witnessed harmless behavior during blackouts.

Results

Seventy-six percent of the respondents reported having witnessed a friend who had a blackout due to the consumption of alcohol. The mean estimated number of alcoholic beverages consumed on the occasion when a blackout occurred was 14.5 glasses (SD = 4.9). Behavior of friends who had a blackout were described as follows: embarrassing oneself or others (30%), falling (16%), kissing (11%), car driving (5%), and deviant behavior (i.e., hurting someone, an argument, fighting, vandalism, or other misbehavior, 28%). Thus, 28 percent of the reported

blackouts witnessed in friends concerned criminally relevant behavior. When driving a car under the influence of alcohol is also considered a serious form of deviant behavior, the percentage is 33 percent. Memory loss for deviant behavior was reported by 41 percent of the respondents. In 55 percent of the cases, the friend's memory of the forgotten event returned. In 45 percent of the cases it did not. Twenty percent of the respondents who had witnessed a blackout during deviant behavior said that their friend's blackout was irreversible (i.e., memories never returned).

To sum up, the results of our second survey again suggest that reports of memory loss for criminally relevant behavior occur on a nontrivial scale. As a matter of fact, 33 percent of the events that occurred during blackouts that were witnessed by our respondents involved deviant behavior compared with 15 percent in our previous survey. In both surveys, the estimated mean number of drinks before blackout was approximately 15.

Even though these results seem to indicate that blackouts occur during criminally relevant behavior, the problem remains that our survey data on blackouts, the number of drinks, and corresponding BACs are based on subjective judgments. To obtain more objective data on alcohol dosage in those who claim blackout, a third study was conducted in which people who had been detained in a traffic-control stop for suspicious driving behavior or car accidents were asked afterward whether they were experiencing a blackout during the control stop or the accident. To learn more about corresponding BACs, blood samples were taken immediately after the traffic-control stop or the accident. In this way, self-reported blackouts could be related to objectively established BACs.

Study 3: Suspected DUI Subjects

Method

In collaboration with the Dutch Drivers-Licensing Authority (Centraal Bureau Rijvaardigheidsbewijzen; CBR), 100 consecutive individuals (93 men) who were stopped for suspicion of driving under the influence (DUI) were retrospectively evaluated. According to the Dutch Law on Medical Research (Wet Medisch-wetenschappelijk onderzoek met mensen; WMO) this type of retrospective, anonymous study is allowed and does not need separate approval of an ethics committee. The mean age was 41 years (range: 21–69, SD = 11). The drivers were stopped during

standard alcohol-control actions by the Dutch police ($n = 48$) because of suspicious driving behavior ($n = 10$) or because of their involvement in a road accident ($n = 42$). In all cases, blood samples were taken and analyzed. Several months later (range: 1–6), these offenders had to undergo a psychiatric examination conducted by a psychiatrist (D.R.) who was appointed by the CBR. The psychiatrist evaluated each offender's driving capacity. Psychiatric assessment concerned prior violations, alcohol problems, and medication. Offenders were also asked whether they had been in a blackout during the traffic-control stop or road accident and whether they had ever experienced a blackout before. In this study, we were mainly interested in the relation between alcohol use and blackout reports.

Drivers who claimed an alcoholic blackout during the traffic-control stop or accident were compared with those who did not claim blackout, by using two-tailed independent-samples t tests. Chi-square tests were used for categorical data on road accidents and blackout claims.

Results

Blood test results showed that the mean BAC of the offenders when stopped was 190 mg/100 mL (SD = 53; range: 66–350 mg/100 mL). Of the 100 individuals, 14 (14%) claimed to have been in an alcohol-related blackout during the traffic-control stop or accident. BACs of offenders claiming blackout did not differ from those of offenders who did not claim blackout ($t_{(91)} < 1.0$, NS), with mean BACs of 180 mg/100 mL, and 190 mg/100 mL, respectively. There was, however, an interesting difference between the two groups. As can be seen in Table 1, 85 percent of the offenders who claimed blackout ($n = 12$) had caused an accident, whereas only 35 percent of the offenders who did not claim blackout had caused an accident ($\chi^2 = 12.9$, $df = 2$, $p < .002$). Mean BACs for both accident-causing groups (i.e., those who did and did not claim blackout) were 204 mg/100 mL ($t_{(39)} < 1.0$, NS). When

Table 1 Offenders Who Did or Did Not Claim Alcoholic Blackout and Who Did or Did Not Cause an Accident

	Blackout	No Blackout	Total
Accident	12 (85)	30 (35)	42
No accident	2 (15)	56 (65)	58
Total	14 (14)	86 (86)	100

Data are expressed as the number of subjects (percentage of the total group or subgroup).

asked whether they had ever experienced an alcoholic blackout before, only 15 percent of the offenders answered affirmatively.

General Discussion

Our results can be summarized as follows. First, in samples derived from the Dutch community, blackouts were reported frequently (67% and 76%, for self and others, respectively). In fact, they are reported more frequently than in U.S. surveys.^{15,16} The average number of drinks respondents said they had consumed before the blackout occurred was 15 within 4 hours. Second, in 15 percent of the cases, respondents said their blackouts involved deviant behavior. When blackouts were observed by others, 33 percent of those reported involved deviant behavior. Third, in approximately 20 percent of the respondents who reported having blackouts during deviant behavior or having witnessed such behavior in others, the memory loss was irreversible. Fourth, the average estimated BACs of individuals reporting blackouts were in the range of 260 mg/100 mL. Fifth, blackouts during a traffic-control stop were also reported, albeit less frequently (i.e., by 14% of the subjects). Corresponding BACs were 180 mg/100 mL. Reports of blackouts were especially common among drivers who had caused an accident (85%).

Our results suggest that people are capable of forgetting deviant behavior after the consumption of large amounts of alcohol. In line with Jellinek's¹⁴ ideas about blackouts and problem drinking, this forgetfulness seems to be related to drinking behavior, in that people who report blackouts consume alcohol more habitually than those who never have experienced blackouts. Based on subjective reports, estimated BACs for blackout episodes in our first survey were extremely high (260 mg/100 mL). Although these BACs reached levels at which a blackout is clinically possible, these reports should be interpreted with caution. There is a serious possibility that reported alcohol dosage was overestimated, since it pertained to an occasion during which the person reported having been in a blackout. Another problem is that respondents may have made an error or may not have thought about certain events, when attributing the absence of memory to the consumption of large amounts of alcohol. Such causal attribution may lead to a subsequent overestimation of the corresponding dosage. This "effort after meaning" is

a well-known obstacle in many retrospective self-report studies.³³

One thing that can be concluded from our surveys with some confidence is that blackout reports cannot always be accounted for as an excuse for deviant behavior. Admittedly, participants in our first survey may have given biased answers to certain survey questions. For example, it is conceivable that they were reluctant to report on their deviant behavior. The intention of our second survey was to eliminate such reporting bias by asking about blackouts of others. As we expected, blackouts during deviant behavior were reported more frequently (33%) in the second survey. Although we did not ask about the details of the deviant behavior and therefore do not know whether subtle motor control was needed for it, our results suggest that people are, indeed, able to forget deviant and criminally relevant behavior while under the influence of alcohol. But does this mean that any claim of alcoholic blackout should be considered credible?

The results of our study of traffic-control stops suggest otherwise. As a matter of fact, they demonstrate that strategic goals may motivate blackout claims. The fact that BACs of drivers claiming blackouts did not differ from drivers without blackouts is rather suspect. Also, BACs of blackout-claiming offenders were far below those obtained in our first survey (180 versus 260 mg/100 mL). Another finding that supports the motivational aspect of blackout claims is that 85 percent of the blackout-claiming individuals had caused a road accident. Thus, there are good reasons to believe that at least some claims of blackout in this group are a form of faking to minimize responsibility.³⁴ However, when asked about previous blackouts, only a minority (15%) reported being familiar with blackouts. This discrepancy is difficult to reconcile with the findings of Harzler and Frommes,²⁷ who reported that those people who report past blackout experiences may also have expectancy-based problems in retrieving events that occurred during intoxication.

An explanation of the low frequency of past blackout experience reported by the participants in our traffic-control study may be that a psychiatrist had to decide the offenders' driving competency and return of driver's license. In this context, failing to report previous blackout experiences may also serve a strategic goal. It would constitute a form of faking to prevent losing one's driver's license because of negative psychiatric advice.

To determine whether a blackout claim is *bona fide*, several factors should be taken into account. To begin with, if possible, blood samples should be taken immediately after the offense to determine whether potential blackout claims are biologically plausible. At BACs lower than 250 mg/100 mL, the plausibility of blackout claims is doubtful.¹³ In our first survey, only 19 percent of the respondents who reported blackouts for criminally relevant behavior had BACs below 250 mg/100 mL. In our traffic control study, 83 percent of the blackout-claiming offenders who had caused an accident had BACs below 250 mg/100 mL. Second, in the absence of objective BAC data, the precise type of behavior for which blackout is claimed should be examined. Since fine-motor coordination is disrupted during the early stages of alcohol consumption, blackouts during events requiring fine-motor functions (i.e., firing a weapon at a distant target) are unlikely.¹³

In conclusion, our survey data suggest that *bona fide* blackouts during criminally relevant behavior do occur. Yet, they also show that, outside the courts, such claims are not often raised by people who had BACs below 250 mg/100 mL. The reality is quite different in a judicial context, as our traffic-control study demonstrates. In that portion of the study, the majority of those who raised blackout claims had BACs below 250 mg/100 mL and were also involved in road accidents. There is every reason to treat their claims with skepticism.

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