

Characteristics of predrinking and associated risks: a survey in a sample of German high school students

Sonja Wahl · Tobias Sonntag · Jeanette Roehrig ·
Levente Kriston · Michael M. Berner

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Abstract

Objectives Finding predictors for predrinking and placing the new phenomenon of predrinking on a greater database. Predrinking is defined as alcohol consumption, alone or with friends, at home or at public places, before going out in the evening to a party or in bars or discotheques.

Methods Data were collected from a representative sample of 757 ninth- and tenth-grade students from 31 high schools located in a south German rural region and a city.

Results Predrinkers, especially those who show this behaviour frequently, were notably more likely to engage in hazardous drinking, and experienced significantly more frequent involvements in fights and alcohol-induced blackouts. They also stated more often that they had the intention of getting drunk when consuming alcohol.

Conclusions Predrinking proves to be a high-risk behaviour, particularly when it occurs at a high frequency. This behaviour has to be seen as part of a new youth culture, which does not seem to be limited to a certain subgroup—with all of the associated risks.

Keywords Alcohol · Predrinking · Prevention · Binge drinking · Online questionnaire

Introduction

Several studies in the past few years have revealed predrinking, i.e. consuming alcohol before going out, to be a new widespread youth phenomenon (Borsari et al. 2007; Paschall and Saltz 2007; Pedersen and Labrie 2007; Hughes et al. 2007; LaBrie and Pedersen 2008; Usdan et al. 2008; Zamboanga et al. 2009a, b, 2011; Pedersen et al. 2009; Smith et al. 2010; Forsyth 2010; LaBrie et al. 2011). It normally takes place in the company of friends. In our own study (Wahl et al. 2010), in which we interviewed 300 young people directly while they were out in the evening, predrinking proved to be responsible for a substantial part of the risks associated with adolescent alcohol consumption. Especially, the youngest interviewees aged 15–17 years tended to be at a great risk of experiencing negative consequences, such as involvement in fights and alcohol-induced blackouts. In this study, we found an average consumption of 150 g alcohol per night out, and 67 % of the adolescents stated that they already arrive in town drunk. These results are in line with findings from other international research groups. Hughes et al. (2007) stated that people who predrink report significantly higher total alcohol consumption over the course of a night out and are more often involved in fights. A recent study by Zamboanga et al. (2011) found similar results for a group of high school students in the same 15- to 17-year age range as our high-risk group. A large part of knowledge about predrinking stems from the work of the research group surrounding LaBrie and Pedersen (Pedersen and LaBrie 2007; LaBrie and Pedersen 2008; Pedersen et al. 2009; LaBrie et al. 2011). In a sample of college students, these authors found a predrinking rate of 64 % and a link between predrinking and alcohol-related negative consequences (Pedersen and LaBrie 2007). Furthermore, they

S. Wahl (✉) · T. Sonntag · J. Roehrig · M. M. Berner
Department of Psychiatry and Psychotherapy,
Freiburg University Medical Center, Hauptstr. 5,
79104 Freiburg, Germany
e-mail: sonja.wahl@uniklinik-freiburg.de

L. Kriston
Department of Medical Psychology, Center for Psychosocial
Medicine, University Medical Center Hamburg-Eppendorf,
Hamburg, Germany

found that on prepartying drinking days (days involving prepartying), females drank significantly more and reached higher blood alcohol levels compared to non-predrinking days (LaBrie and Pedersen 2008). In another study, they examined the reasons for predrinking and found saving money and making the night more interesting as the most important reasons for predrinking (Pedersen et al. 2009). Recently, LaBrie et al. (2011) tried to explain the link between predrinking and problem behaviours, more specifically between prepartying and alcohol-induced blackouts. They found several variables that increased the likelihood of blacking out, among them family history of alcohol abuse, frequency of prepartying, playing drinking games and consuming shots of liquor while prepartying.

The situation in Germany is only partially comparable to that of the USA, where most of the existing data were gathered, mainly because the legal drinking age in Germany is 16 compared to 21 years in the USA. This means that a greater database, especially in the European countries, is required to explore whether the phenomenon of predrinking in Europe is comparable with that in the USA. If this is the case, it would suggest that interventions in town failed to consider critical drinking behaviour, which is more likely to take place even before going out.

Wells et al. (2009a) called for further research “examining the nature, extent and consequences of predrinking as well as the contribution of predrinking to overall consumption and gender differences in effects” (p. 8).

The goals of the presented study are to further describe the phenomenon of predrinking, find predictors for predrinking, replicate, disprove or expand our previous findings, and place the phenomenon of predrinking on a greater database, with a concentration on what we found in our previous study (Wahl et al. 2010) to be the at-risk population, i.e. the 15- to 16-year-olds. (In our first study (Wahl et al. 2010) the high-risk-group was the 15- to 17-year-olds. As compulsory schooling in Germany ends with the age of 16 years and our survey took place at school, the 17-year-olds were not included in the presented study.) Answering these questions is of great importance for future prevention and intervention approaches, because the exact knowledge of how predrinking takes place and information about related consequences constitute prerequisites for successful interventions.

Methods

Design

All secondary schools in the region of Breisgau-Hochschwarzwald and Freiburg received information about the planned survey and their ninth and tenth graders were

asked to participate. This encompassed, on the one hand, an informative meeting for all prevention teachers, in which we presented the results of our first study and provided information about the planned survey in schools. On the other hand, we sent information letters about the study with an invitation to participate to all of the concerned schools. Four weeks after the first written invitation, a reminder letter was sent. Having expressed their willingness to participate, teachers received detailed information about the background of the study and instructions on how to conduct the survey with the help of a link to the online questionnaire. Informed consent forms were given to the parents, and teachers were advised to provide only those students who had signed informed consent with access to the survey. Teachers were asked to reserve one lesson (45 min) for the survey. Filling out the questionnaire took between 25 and 35 min. Teachers filled out a data sheet during the survey in which they specified the number of participating students, the date and time of the survey and ratings of the data quality. Data were transferred directly to the server of the Freiburg University Medical Center, where they were saved.

Questionnaire

A structured online questionnaire was designed using the program Unipark[®]. The questionnaire included 147 questions arranged into 13 topic groups: socio-demographic data, leisure time activities, alcohol consumption and predrinking, drinking motivation, smoking and illicit drugs, attitude towards drinking, attitude of parents towards drinking, experiences of violence, peer group, as well as two validated instruments, the AUDIT (alcohol use disorders identification test, Saunders et al. 1993) and the SDQ-S (strength and difficulties questionnaire self-report, Goodman 1997).

Measures

Predrinking was measured with the question: “Do you normally drink alcohol before going out?”, that had five possible answers “hardly ever”, “seldom”, “sometimes”, “often” and “(almost) always”. This question was only answered by those participants who stated that they sometimes consumed alcohol. A more detailed definition of predrinking was part of the questionnaire introduction (“We study the phenomenon predrinking, which means drinking alcohol at home, at friends’ home or outdoor before going to another location, e.g. a party, discotheque, bar or pub”). The variables dependency risk, blackouts and drinking frequency were measured by the AUDIT (Saunders et al. 1993). With regard to the variable Involvement in fights, we asked the participants: “How often have you been involved

in a fight on the street or in a pub/discotheque in the last 12 months?” For the variable intention of getting drunk, participants were asked: “When you are consuming alcohol, do you aim to get drunk?”, with five possible answers “hardly ever”, “seldom”, “sometimes”, “often” and “(almost) always”.

Participants and recruitment

Eighty-four schools in Freiburg and the region of Breisgau-Hochschwarzwald were informed about the study and invited to participate (Fig. 1). Teachers from 31 schools were willing to participate, among them seven grammar schools, two intermediate secondary schools, 13 secondary general schools and nine vocational or comprehensive schools. In these 31 schools, 51 grades participated in our study, with a total of 808 students; 51 students were excluded from further analysis because they quit the questionnaire too early or because data quality was too low. The final sample size was therefore 757.

Analyses

All analyses were carried out using SPSS® 17.0. We used descriptive analyses for characterizing the sample. Logistic regression analyses were used to analyse associations between consumption types and different kinds of risky behaviour. In order to control effects of possible confounders, “number of consumed drinks”, “sex”, “grade”, “school type”, “migration background”, “parents’ level of

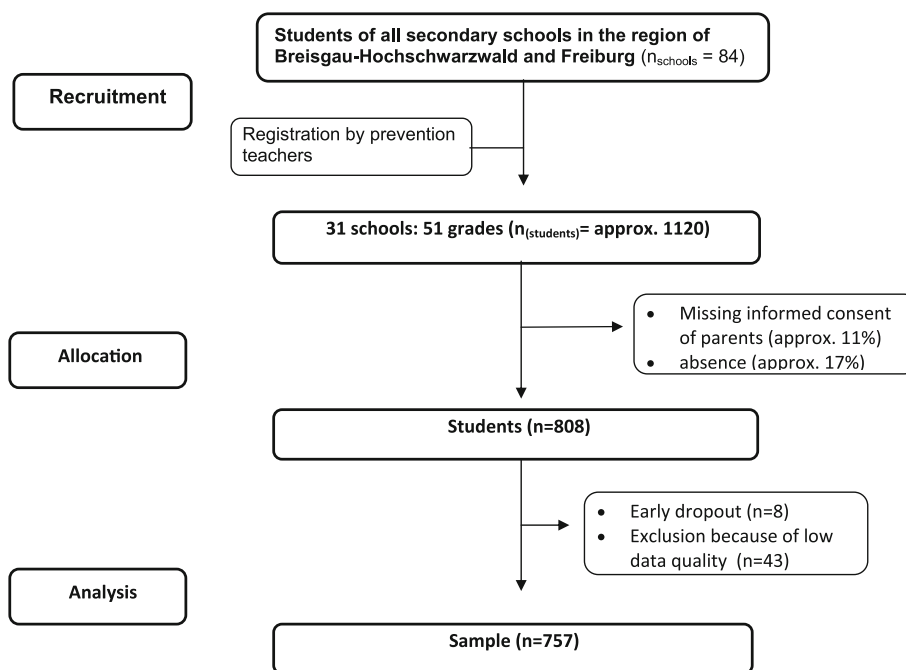
education” and “habitation” were included in the model as additional independent variables. Dependent variables were dichotomized. Concerning the assessment of dependency risk with the AUDIT, we carried out analyses with a cutoff of eight for specifying problematic consumption.

Results

Sample description

The data of 757 students provided the basis for further analyses. The mean age was 15.6 years (SD = 0.81), and 50.1 % of the sample were male and 49.9 % female. (As legal drinking age and legal entry age for bars and nightclubs is 16 years in Germany, this raises the question whether our sample uses nightlife at all. We found that about 50 % of 15-year-olds in our sample stated drinking alcohol in bars and pubs regularly. This touches legal questions of youth protection, which would go beyond the scope of this manuscript and are therefore not thoroughly discussed here.) Of the participating students, 62.4 % attended a higher-track school (the German “Gymnasium”), 9.9 % a medium-track school (German “Realschule”), 15.5 % a lower-track school (German “Hauptschule”) and 12.2 % a vocational school (German “Berufsschule”). An academic background for at least one parent was mentioned by 218 adolescents (28.7 %) (i.e. pursuing a profession which demands a university diploma), and for 347 (55.6 %) of the students, the parents’ work implied a professional education. Fifty-one

Fig. 1 Participant flowchart (characteristics of predrinking and associated risks, Freiburg, Germany, 2010)



(6.7 %) adolescents had parents who were unemployed or non-skilled. For 144 (18.9 %) students, social milieu could not be defined. Migration background was reported by 207 students (27.2 %). Of the 757 students, 198 (27.9 %) lived in Freiburg (215,000 inhabitants), 98 (13.8 %) in a medium-sized town (<50,000 inhabitants), 208 (29.3 %) originated from the suburbs of Freiburg and 206 (29.0 %) lived in small towns or in rural areas.

Consumption types

Table 1 shows the allocation of students to different consumption types. Approximately, one-third reported not drinking alcohol at all, one-third stated that they consumed alcohol but did not drink before going out and one-third reported drinking before going out. Of this third, again one-third showed a low frequency of predrinking (i.e. “rarely”), one-third showed medium frequency (i.e. “occasionally”) and one-third could be identified as high-frequency pre-drinkers (i.e. “often/always”).

Characteristics of predrinking

More than eight in ten students (84.9 %) who predrink report doing so at home before going out with friends or on the way to a party, pubs or discotheques. However, 14.9 % of predrinkers stated that they also sometimes drank on their own before going out. Notably, 31.2 % of all students also stated that they sometimes consumed alcohol after going out.

Students were asked about the events before which they predrank. About three-fourths (78.7 %) mentioned private parties as an event that they attended after predrinking; 77.2 % named pubs, bars and discotheques. Less common was predrinking before visiting a concert (35.6 %), the cinema (20.2 %) or a sports event (19.9 %).

With regard to duration, 45 % of predrinkers stated that the predrinking process normally lasted between 30 and 60 min; 14 % stated a time period of under 30 min, 28 % a duration between 1 and 2 h and 4 % more than 2 h.

Predrinking and associated risks

Risk of developing alcohol dependency

A large part of all respondents showed no risk or a low risk of consumption according to the AUDIT ($n = 515$, 67.8 %). In contrast, 245 (32.2 %) adolescents showed at least problematic consumption. In 83 (10.9 %) cases, the AUDIT score revealed severe alcohol-related problems.

In the logistic regression model, the AUDIT cutoff of eight was used. Data show a highly significant association between the risk of developing alcohol dependency and predrinking (s. Table 2). Whereas in the group of non-drinkers there are logically no at-risk persons (for this reason, consumption type one is not part of the analysis), the risk of showing an AUDIT score of eight or more increases tremendously with higher predrinking frequency. Statistically significant covariates are the number of consumed drinks per evening, sex and habitation (living in a medium-sized town).

Involvement in fights

About three-fourths of our sample (76.3 %) told us that they had not been involved in any aggressive conflict in night life during the past 12 months; 11 % named frequencies between one and nine times during the past year (with a mean of 4.3) and 1.7 % stated that they had been involved in fights more than ten times during the past 12 months.

A logistic regression model was calculated with the dichotomous dependent variable “Involved in a fight in the past year” (yes vs. no). As being involved in a fight is not necessarily associated with alcohol consumption, all consumption groups were included. As Table 3 shows, predrinking is strongly associated with involvement in fights, whereas there is no association with the number of consumed drinks. Further significant covariates are male sex, migration background and being in a general school (vs. a secondary school).

Table 1 Grouping according to consumption behaviour, and absolute and relative frequencies of each consumption type with subtypes (characteristics of predrinking and associated risks, Freiburg, Germany, 2010)

Main group	Subgroup	Description	Consuming alcohol	Predrinking	Number	Percent
1		Non-drinkers	No	No	249	32.9
2		Non-predrinking drinkers	Yes	No	236	31.2
3		Predrinkers	Yes	Yes	272	35.9
	3a	Low-frequency predrinkers	Yes	Low frequency	85	11.2
	3b	Medium-frequency predrinkers	Yes	Medium frequency	103	13.6
	3c	High-frequency predrinkers	Yes	High frequency	84	11.1

Table 2 Predictors of risk of developing alcohol dependency (measured with AUDIT, cutoff >8); logistic regression ($n = 393$) (characteristics of predrinking and associated risks, Freiburg, Germany, 2010)

	Number	OR	95 % CI
Consumption type^a			
2	177	Ref	
3a	73	1.91	0.94; 3.88
3b	77	10.70***	5.04; 22.72
3c	66	17.07***	6.83; 42.65
Number of consumed drinks			
1–2 drinks	100	Ref	
3–6 drinks	214	2.07*	1.04; 4.12
7 drinks or more	79	41.37***	12.73; 134.40
Sex			
Female	173	Ref	
Male	220	2.17**	1.22; 3.86
Grade			
9	172	Ref	
10	221	0.49*	0.28; 0.85
School type			
General	115	0.66	0.33; 1.30
Secondary	278	Ref	
Migration background			
Yes	98	1.30	0.68; 2.48
No	295	Ref	
Parents' level of education			
Non-academic	268	1.04	0.55; 1.95
Academic	125	Ref	
Habitation			
City	99	Ref	
Outskirts	52	0.62	0.24; 1.64
Medium	115	2.49*	1.14; 5.43
Rural	127	1.66	0.76; 3.62

^a Groups: 2 = non-predrinking drinkers, 3a = low-frequency pre-drinkers, 3b = medium-frequency pre-drinkers, 3c = high-frequency pre-drinkers

* $\alpha < 0.05$, ** $\alpha < 0.01$, *** $\alpha < 0.001$

Alcohol-induced blackouts

The AUDIT question “How often during the last year have you been unable to remember what happened the night before because you had been drinking?” was answered by 68.5 % of our sample with “never”; by 17.9 % with “less than once a month”, by 6.7 % with “once a month” and by 2.2 % with “once a week or more often”.

Table 4 shows the results of a logistic regression analysis with the dichotomous dependent variable “experienced alcohol-induced black out in the past year” (yes–no). There is a strong association between the consumption group and an increasing risk of experiencing blackouts when students

Table 3 Predictors of being involved in fights; logistic regression ($n = 531$) (characteristics of predrinking and associated risks, Freiburg, Germany, 2010)

	Number	OR	95 % CI
Consumption type^a			
1	171	Ref	
2	161	2.10	0.83; 5.31
3a	65	2.12	0.66; 6.82
3b	71	5.60**	1.91; 16.43
3c	63	5.55**	1.75; 17.56
Number of consumed drinks			
None/1–2 drinks	266	Ref	
3–6 drinks	192	1.14	0.52; 2.48
7 drinks or more	73	1.68	0.67; 4.22
Sex			
Female	260	Ref	
Male	271	2.44**	1.40; 4.26
Grade			
9	254	Ref	
10	277	0.88	0.50; 1.56
School type			
General	154	2.12*	1.16; 3.87
Secondary	377	Ref	
Migration background			
Yes	137	1.83*	1.02; 3.26
No	394	Ref	
Parents' level of education			
Non-academic	341	1.46	0.75; 2.83
Academic	190	Ref	
Habitation			
City	139	Ref	
Outskirts	62	1.19	0.49; 2.89
Medium	169	0.96	0.47; 1.98
Rural	161	0.65	0.29; 1.45

^a Groups: 1 = non-drinkers, 2 = non-predrinking drinkers, 3a = low-frequency pre-drinkers, 3b = medium-frequency pre-drinkers, 3c = high-frequency pre-drinkers

* $\alpha < 0.05$, ** $\alpha < 0.01$, *** $\alpha < 0.001$

state that they predrink more often. There is also a strong relationship between the “number of consumed drinks” and blackouts, but only if the number of drinks exceeds seven. Migration background also increases the risk of experiencing alcohol-induced blackouts.

Intending drunkenness when drinking alcohol

When asked whether the intention to predrink is to get drunk, 37.5 % of the students concerned answered “never”, 23 % “seldom”, 23.4 % “sometimes”, 9.7 % “often” and 6.3 % “almost always”.

Table 4 Predictors of alcohol-induced blackouts; logistic regression ($n = 393$) (characteristics of predrinking and associated risks, Freiburg, Germany, 2010)

	Number	OR	95 % CI
Consumption type ^a			
2	177	Ref	
3a	73	1.55	0.82; 2.91
3b	77	2.34**	0.64; 2.38
3c	66	6.58***	3.13; 13.85
Number of consumed drinks			
1–2 drinks	100	Ref	
3–6 drinks	214	1.51	0.83; 2.76
7 drinks or more	79	6.76***	2.98; 15.33
Sex			
Female	173	Ref	
Male	220	0.91	0.56; 1.47
Grade			
9	172	Ref	
10	221	0.66	0.41; 1.08
School type			
General	115	0.57	0.32; 1.02
Secondary	278	Ref	
Migration background			
Yes	98	1.97*	1.13; 3.44
No	295	Ref	
Parents' level of education			
Non-academic	268	1.30	0.75; 2.23
Academic	125	Ref	
Habitation			
City	99	Ref	
Outskirts	52	0.53	0.23; 1.23
Medium	115	1.23	0.64; 2.38
Rural	127	1.29	0.66; 2.51

^a Groups: 2 = non-predrinking drinkers, 3a = low-frequency predrinkers, 3b = medium-frequency predrinkers, 3c = high-frequency predrinkers

* $\alpha < 0.05$, ** $\alpha < 0.01$, *** $\alpha < 0.001$

Table 5 shows the results of a further logistic regression model calculated with the dichotomous dependent variable “Intending drunkenness when drinking alcohol” and the categories “never/seldom” versus “at least sometimes”. Highly significant predictors are once again the predrinking group (with increasing risk when predrinking occurs more often) and the number of consumed drinks.

Trying to identify the “typical predrinker”

We tried to identify the socio-demographic variables which are linked to the tendency to predrink and especially to high-frequency predrinking. To this aim, univariate

Table 5 Predictors of intention to get drunk when drinking alcohol; logistic regression ($n = 393$) (characteristics of predrinking and associated risks, Freiburg, Germany, 2010)

	Number	OR	95 % CI
Consumption type ^a			
2	172	Ref	
3a	73	1.29	0.63; 2.64
3b	77	4.78***	2.43; 9.37
3c	66	6.20***	2.98; 12.90
Number of consumed drinks			
1–2 drinks	95	Ref	
3–6 drinks	214	4.85***	2.05; 11.48
7 drinks or more	79	10.54***	3.91; 28.44
Sex			
Female	170	Ref	
Male	218	1.62	0.95; 2.76
Grade			
9	170	Ref	
10	218	0.91	0.54; 1.53
School type			
General	111	0.90	0.49; 1.67
Secondary	277	Ref	
Migration background			
Yes	95	1.33	0.73; 2.44
No	293	Ref	
Parents' level of education			
Non-academic	264	1.10	0.62; 1.97
Academic	124	Ref	
Habitation			
City	97	Ref	
Outskirts	52	1.18	0.51; 2.71
Medium	114	1.52	0.74; 3.11
Rural	125	0.60	0.29; 1.26

^a Groups: 2 = non-predrinking drinkers, 3a = low-frequency predrinkers, 3b = medium-frequency predrinkers, 3c = high-frequency predrinkers

* $\alpha < 0.05$, ** $\alpha < 0.01$, *** $\alpha < 0.001$

analyses with χ^2 tests were carried out. It should be emphasized that these analyses do have an exploratory nature. Table 6 shows the results. The only variables to show clear effects are sex and age: boys tend to drink and predrink more often than girls. Nevertheless, girls also show dangerous consumption behaviours, albeit less often than boys. The strongest association we found concerning age: from grade 9 to 10 (i.e. from the age of 15 to the age of 16 years), there is a clear increase in adolescents who state that they consume alcohol and who show risky forms of consumption. In contrast, school type, social milieu and habitation do not show any clear differences concerning consumption behaviour.

Table 6 Comparison of sex, grade, school type, migration background, parents' level of education and habitation between consumption types; information in percent (characteristics of predrinking and associated risks, Freiburg, Germany, 2010)

	n	Groups					χ^2	p value
		1	2	3a	3b	3c		
Sex								
Male	379	28.0	33.2	13.2	13.2	12.4	10.51	0.03
Female	378	37.8	29.1	9.3	14.0	9.8		
Grade								
9	385	40.8	27.8	10.4	12.2	8.8	22.9	<0.01
10	372	24.7	34.7	12.1	15.1	13.4		
School type								
General	209	31.1	31.6	10.5	12.4	14.4	3.61	0.46
Secondary	545	33.8	31.2	11.6	13.8	9.7		
Migration background								
Yes	205	35.6	28.8	8.3	13.7	13.7	4.97	0.29
No	552	31.9	32.1	12.3	13.6	10.1		
Parents' level of education								
Non-academic	407	28.5	32.9	13.3	14.0	11.3	8.00	0.09
Academic	218	39.4	28.4	10.1	12.4	9.6		
Habitation								
City	196	37.8	29.6	10.2	11.2	11.2	21.0	0.18
Outskirts	207	35.7	31.9	8.7	13.0	10.6		
Medium	98	27.6	25.5	16.3	18.4	12.2		
Rural	206	26.2	32.5	13.6	14.6	13.1		

Groups: 1 = non-drinkers, 2 = non-predrinking drinkers, 3a = low-frequency predrinkers, 3b = medium-frequency predrinkers, 3c = high-frequency predrinkers

General school = Hauptschule, Berufsschule, Gesamtschule; secondary school = Realschule, Gymnasium

Medium habitation = living in a medium-sized town

Discussion

Our study not only replicates the findings of our first study concerning predrinking (Wahl et al., 2010), but also places the new drinking phenomenon in Germany on a better empirical foundation. Thirdly, it provides further insights into the characteristics and the risks, as well as some suggestions for potential prevention strategies for this behaviour.

Some limitations in the interpretability of our data should be mentioned. As is the case in all cross-sectional studies, we are unable to show causal links between the variables. It cannot be stated for certain whether the consumption type really influences the dependent variables or vice versa. We only can show associations between the studied parameters. For some variables, there were no validated measures available and we had therefore to assess them with only one question (predrinking, intention of

getting drunk). Another particularity of our study lies in statistical disentangling drinking and predrinking. Whereas in reality drinking and predrinking are closely related, for our analyses we had to separate them to examine the single contributions of each phenomenon. This procedure shall not hide the fact that in the reality of young persons, no such strict separation exists.

Our sample cannot claim to be fully representative of all students due to the self-selection through the teachers who were motivated to take part. One advantage of this approach was that it was the teachers who decided upon participation, and not the students themselves (which would likely have constituted a more problematic kind of self-selection). Therefore, representativeness at the students' level of consumption could be assumed. Data collection at school has several advantages such as accessibility and control by the teachers, but we cannot rule out an influence on the students' response behaviour through the fact that they were at school, surrounded by their classmates, when filling out the questionnaire. However, we could not think of another possible surrounding which would be more suitable and at the same time realistic.

Our results contain some important implications. Several points should be emphasized:

1. Predrinking has to be seen as a dangerous consumption behaviour that has proven to be linked to several risks, among them higher risk of developing an alcohol dependency, more involvement in violent conflicts and more frequent experience of alcohol-induced blackouts. This is in line with the results of Pedersen and La Brie (2007) and Hughes et al. (2007), which means that there seems to be a phenomenon of predrinking in Germany comparable to that described by American and other European researchers. The large difference in the legal drinking age does not seem to make any difference concerning the attractiveness of predrinking.
2. We were able to show that predrinking alone is not dangerous per se, but that the dangerousness depends on the frequency: there seems to be a form of predrinking which is widespread and which is not as problematic as we previously thought. Young people who reported rare predrinking show much lower risks than those who predrink regularly and more excessively. This explains how predrinking can be so popular and so dangerous at the same time. As is often the case, the amount is the crucial factor.
3. One important variable in terms of motivation for predrinking seems to be the intention of getting drunk when consuming alcohol. This result is in line with the findings of Pedersen and LaBrie (2007) and supports the view of Wells et al. (2009b, in their response to the commentary of Room and Livingston 2009):

predrinking seems to be a consequence of the underlying motivation to get drunk. This means that prevention strategies need to take into account the fact that young people seek to become intoxicated and are creative in finding opportunities to do so.

4. Unfortunately, we did not succeed in characterizing the “typical” predrinker in terms of socio-demographic variables. This would have been very promising regarding tailor-made prevention strategies. But it seems that (at least concerning the variables enclosed in our analyses), in fact, every young person—regardless of education, habitation or family background—is potentially at risk of developing alarming drinking behaviours. Presumably, this has to do with the fact that predrinking seems to be part of a new youth culture and that the threshold for becoming an extreme predrinker is relatively low for every adolescent. In social networks like Facebook, praises of drunkenness and predrinking are very common. To name examples: The club “Predrinking even before predrink’s because you’re just that keen” counts 145.000 “Likes”, “Predrinking so hard you don’t even make it out” has 96.000 “Likes” and the group “What the hell happened between predrinking and waking up?” got 38.000 “Likes” to date. Comparable groups are rather commended by like buttons than overtly criticized or even discussed.
5. Two factors are clearly associated with an increasing risk of extreme predrinking: sex and age. Boys consume alcohol more often and they more frequently show all forms of predrinking than girls. However, this does not mean that girls do not face comparable risks as boys—only a minority of girls do not consume alcohol and nearly 10 % of girls are in the high-risk group of extreme predrinkers. It would therefore be wrong to conclude that prevention campaigns should target boys more than girls. As for the factor of age, we apparently succeeded in finding the sensitive phase in which predrinking becomes more attractive for adolescents. This means that the ninth grade should be the place for intensive prevention campaigns, and perhaps fostering peer-to-peer prevention approaches might be a good strategy. With regard to content, the intention of getting drunk could be a promising starting point.

One especially important topic regarding prevention campaigns is the question of adolescents’ motivation for predrinking—it can be assumed that predrinking combines many advantages for young people (such as for example limitation of costs and the possibility to drink alcohol at all in countries where consuming alcohol in pubs and bars is legally restricted) and is therefore highly attractive. Our

research group carried out analyses with qualitative data to answer the question of motivation precisely, which seems to be indispensable for designing new approaches to prevention. It is indeed probable that the young at-risk persons are not aware of the dangers linked to predrinking. One first step regarding tailored strategies could therefore be to inform persons concerned—parents, teachers, educators and adolescents themselves—about the dangers of predrinking, as found in our presented study. For the planning of new prevention campaigns, it will be important to take into account the phenomenon of predrinking. It will probably not be useful to solely change young people’s access to alcohol in pubs and bars, because it seems that this would even intensify the problems associated with predrinking, as described by Wells et al. (2009a). What we need are comprehensive prevention campaigns which approach the problem of youth alcohol consumption from different sides at the same time.

Conflict of interest The authors declare that they have no conflict of interest.

Ethical standards The research presented complies with the current laws of Germany. The protocol of the study was approved by the local ethics committee at the University Medical Centre, Freiburg.

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