Author's response to reviews

Title: Alcohol consumption and binge drinking in adolescents: comparison of different migration backgrounds and rural vs. urban residence - a representative study

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Version: 2 Date: 12 October 2010

Author's response to reviews: see over
Dear Dr. Gallus, dear Mrs. Pafitis,

We like to respond to the comments of the reviewers (in italics: changes in the manuscript) and to the question of the associate editor and reviewer number 2, whether this concerns unpublished data:

The publication of the design and implementation of the study which was named by reviewer 2 concerns a research report in German which is not disseminated by a publisher nor published in a scientific journal. Research reports are necessary to report on the work financed by public grants.

The data we published here in this article have not been reported in this way. The analyses were carried out only for the publication in this manuscript. There was no publication on binge drinking data from this survey and there was not any analysis of the consumption patterns under the perspective of neither migration background nor urban-rural differences in this detail. There has been one article in a German non-peer-reviewed (!) journal on the general prevalence of the different substances from this study. The German article includes a regression analysis where urban/rural and three migration backgrounds are included as control variables for regular consumption of several drugs. The general prevalence of substances are not reported in the here submitted manuscript (except when the reviewer asked for it).

There is from our perspective no overlap in the reported data and even more important the German article will likely not be found and read by the scientific community. The slight accusation of double publication is therefore in our eyes not justified.

Kind regards,

Carolin Donath
(Corresponding author)

**Reviewer’s report**

**Title:** Alcohol consumption and binge drinking in adolescents: comparison of different migration backgrounds and rural vs. urban residence - a representative study

**Version:** 1  **Date:** 7 September 2010

**Reviewer:** Lorenza Scotti

**Reviewer’s report:**

The manuscript provides useful data on the prevalence of alcohol consumption and prevalence of binge drinking in a large representative sample of german adolescents focusing on difference in behaviour according to migration background and urban-rural residence. However there are some flaws which require to be taken into account.

Minor Essential Revisions

Method section

In the “Design” subsection the authors:
- wrote: “The classes of region size were: Western Germany (urban districts): cities with more than 500,000 inhabitants, cities with more than 100,000 inhabitants, cities with less than 100,000 inhabitants”. Perhaps the authors
means "cities with more than 100,000 inhabitants and less than 500,000". Could the authors specify it in the text?

This was not a mistake but the original classification of region sizes specified for drawing of the sample. Cities of more than 500,000 are also called metropolises.

- asserted that: “The goal was to survey 50,000 adolescents from different regions”. Could the authors briefly explain how the sample size was established?

It has to be taken in account that not students but classes were drawn by chance. The number of 50,000 students refers to a goal of 2,500 classes. It is known that about 20 students per class can be retrieved and used for data analysis. The number of 2,500 classes was chosen in the way that for every region in Germany which was supposed to be represented in the survey a sufficient number of classes was evident. It was especially important to have “enough” East- and Western-German classes in the survey. For demographical reasons only 10 % of all German students are going to schools in Eastern Germany (except Berlin). Therefore a number of classes high enough was needed to explore even urban-rural differences in Eastern Germany (only 3 % of all German students are going to Eastern German urban schools (without Berlin) and 7 % of all German students are going to Eastern German rural schools). The inclusion of 250 classes in Eastern Germany results in a sample of 75 classes of urban Eastern German schools and 175 classes of rural Eastern German schools. Additionally to the 250 Eastern German classes, 75 classes in Berlin and 2,175 classes in Western Germany were drawn. This totals up to 2,500 classes with roughly 50,000 students. \( \Rightarrow \) a short version of this explanation was included in the design section

In the “Sample” subsection the authors:
- wrote that 44,610 students out of 71,891 drawn accepted to participate. Is the response rate similar to other survey on adolescents?

The response rate is lower than in the comparable German part of the ESPAD-study, a representative study with 12,448 participating students at the age of 15/16 years. The reasons are clearly identifiable: In the ESPAD-study school classes were drawn to participate in a second round as substitute for all the classes which were as a whole not willing to participate (teacher/head of the school decision). This has not taken place in the here reported study. Therefore looking only at the response rates of those students, whose teachers/head of schools decided to participate one can perceive that the response rates are relatively similar to the ESPAD study (88.0 % our study; 90.4 % ESPAD study). \( \Rightarrow \) This explanation has been added to the discussion section

- gave an example of the reliability of the proportion of the sample respect to the proportion of population for each area. Perhaps a more details about this reliability between the drawn sample and the target population could be useful for the readers
The proportion of students in the 9th grade in every class of region size in West and Eastern Germany was compared to their proportion in the sample. With those two percentages for each category the reliability can be seen and rated. In the table below which is from the report about the research project in the last two columns the two percentages for each class of region size can be seen and compared. → Additional information about this procedure was added to the “Sample” section.

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- should always report the standard deviation when a continuous variable (as the mean age of first consumption) is reported.  
  The standard deviation was added. For mean age it is 0.7.

- wrote “In the large cities, the return rate was lower in comparison with rural districts and urban districts with less than 500,000 inhabitants”. Could part of the difference in prevalence of alcohol consumption between cities, rural districts and urban districts be explained by this fact?
  No, because weighting factors were implemented to control for this bias as described in the sample section. Furthermore the imbalances in the classes of region size were much smaller than between school forms which were also controlled by weighting factors.

The authors have already reported in “Discussion” section that generally the subjects who refuse to participate could have a higher alcohol consumption respect to those who participate in the survey. Could the authors stress this concept?
We already state in the discussion “However, it has to be taken into account that the adolescents who refused to participate probably engage at least to the same percentage as their participating colleagues in alcohol consumption, maybe even more, since they were unwilling to disclose this behavior. It could therefore be possible that the number of consumers respectively binge drinkers is even underestimated.” The section was amended by: “This should lead to an even stronger focusing on the need for prevention measures and legal regulations which function in the sense of structural prevention”.

3
In the “Statistical analysis” subsection:
- the author should better specify that ANOVA test was applied to continuous variable and chi square test to the categorical variables.

*This is incorporated in the manuscript.*

Moreover the authors reported as significant a p-value of 0.001. Could the authors add a reference which justify this value?

The significance level was chosen because of the large sample. The larger the sample the smaller the differences which result in a significance. We did not want to inflate the alpha error. Following a a reference:


→ the reference was included in the section Statistical Analysis

Results section
In the “Alcohol consumption patterns in a rural-urban comparison “ subsection:
- the authors should report the data of life-time prevalence of beer and hard liquor in the text.

*The prevalences are included in sentence number 2 of the Results section. (86.1 for beer and 55.2 for hard liquor*

- is not clear how the authors reported the test F results. Are the numbers included in brackets the degree of freedom of the test? In this case, should not be reported two type of degree of freedom?

Yes, it is correct that the numbers in brackets constitute the degree of freedom. There are two degrees of freedom in the analyses for urban-rural differences since there are three categories of community size. This way of reporting results of ANOVAs is usual in scientific publications.

- the authors reported that there’s a difference between rural and urban residence in age of first consumption of beer and alcopops. These results are in contrast with figure 3 were confidence intervals seem to overlap suggesting no difference. Please check these results.

The differences were statistically proven significant by ANOVAs for the beverages beer and alcohol which are reported in the results section in sentence number 4. It is also reported there that for the other beverages there is no statistical significant difference. The results are not in contrast with Figure 3 since in Figure 3 it is not the confidence intervals but the standard deviations which are incorporated in the graphic. *The information that the matter concerns standard deviations was included in the text of the manuscript.*

- the authors specified that a sensitivity analysis was performed. Please describe better this analysis reporting the details in the “Statistical analysis” section and provide the corresponding results in the “Results” section.

In the results section is stated so far: “A sensitivity analysis was carried out to disentangle the rural-urban differences from the different proportions of adolescents with migration background living there. Rural-urban differences concerning life-time-prevalence and 12-month-prevalence for alcohol in general and the different alcoholic beverages were additionally explored with German adolescents only (without migration background). The urban-rural differences were obvious in the same direction and statistically significant.”
Now this paragraph without the last sentence is also included in the Statistical analysis section.
It is amended by: “Again Chi²-tests were used to explore statistically significant differences in the prevalence. The aim of the sensitivity analysis was to confirm statistical differences between urban and rural consumption patterns detected in the whole sample by only looking at the German adolescents so that the difference cannot be attributed to adolescents with migration background.”

In the results section the above cited paragraph includes additionally the following: “The life-time prevalence for all alcoholic beverages is higher in adolescents with rural residence in comparison to urban residence: beer 90.8 % vs. 86.7 % (p < .001); wine/sparkling wine 82.0 % vs. 84.4 % (p = .002); alcopops 64.6 % vs. 67.1 % (p = .003); hard liquor 50.6 % vs. 63.6 % (p < .001). The 12-months prevalence is also higher for every alcohol beverage in adolescents with rural living background (p ≤ .001).”

In the “Alcohol consumption patterns in adolescents with migration background” subsection the authors:
- wrote “As shown in Figure 5, beverage specific lifetime prevalence shows the same pattern as life-time prevalence of alcohol with differences between Turkish adolescents and more similar behaviour among German and former Soviet Union adolescents”. Did the authors perform an ANOVA with contrast to detect this result?
No, because this result is graphically obvious: When even the most consumed beverage (beer) has a lower life-time-prevalence in Turkish adolescents than the rarest consumed beverage in German and Russian adolescents (hard liquor) there is a definite difference. There are no overlaps in frequencies.

- stated that “Beverage specific analyses show that basically the youth tries first beer, later wine and sparkling wine, then alcopops and last hard liquor”. Please could the author specify better this issue?
The sentence was specified through naming explicit results in this paragraph: “German adolescents try after beer and wine alcopops at an average age of 13.85 (SD 1.26) years and hard liquor at an average age of 14.02 years. Students with “Russian” migration background try beer with 12.52 (SD 2.47) years, wine respectively sparkling wine with 12.96 (SD 2.17) years, alcopops at an average age of 13.95 (SD 1.57) and hard liquor as the latest beverage at an average age of 14.12 (SD 1.71) years. In contrast, Turkish adolescents try beer at an average age of 13.45 (SD 2.04), later wine or sparkling wine at an average age of 13.66 (SD 1.84), alcopops with 14.15 (SD 1.49) years and hard liquor at an average age of 14.08 (SD 1.74). Except for hard liquor the beverage specific first consumption age differs between migration backgrounds as ANOVAs have shown (p < .001 for beer, wine, alcopops). However, the first consumption age of hard liquor is not significantly different between adolescents from different cultural backgrounds (F (2) = 3.54; p = .029).”

-reported “...adolescents with “Russian background” have the highest prevalence of regular consumption of...” Please provide a definition for “regular consumption”. The definition is “at least once a week”. This was included in the above mentioned sentence in the result section.
-showed a range of days of binge drinking with decimal. It’ not clear why this maximum and minimum values are not integer values?
The range describes the range of mean values between the countries. That means for each country/migration background a mean of days was calculated. Already this mean value can have a decimal. In the reported range the lowest of these mean values (2.83) and the highest of these mean values (6.57) were reported.

The authors should include the data on alcohol in general in table 2, and the confidence intervals in figures 2 and from 4 to 8. 
*The data on alcohol in general are included in Table 2.*

As already mentioned above in figure 3 are included the standard deviations not the confidence intervals. The figures 2, 4, 5, 6, 7 and 8 show percentages as illustration of descriptive statistics. There are no confidence intervals for frequencies. When checking for significant differences with Chi²-tests the probability of deviations in cell count is estimated and rated if this is a possible effect by chance. The Chi²-statistics do not use confidence intervals for estimating significant differences.

Discussion section
The author stated:
- “Furthermore, the differences were also shown in a multivariate analysis of the sample for drugs in general". It's not clear if the multivariate analysis was performed on the same sample and which results were confirmed. 
  *This constituted a regression analysis with consumption as dependent variable. The control variable urban/rural turned out to be significant.*  
  → *This has been included in the discussion.*

- “In summary, 15-year-olds residing in rural areas drink on more occasions a year, engage more often in binge drinking and have higher life-time prevalence for all alcoholic beverages" Which is the reference group? 
  *Reference group are 15-year-olds residing in urban areas* → *this has been incorporated in the cited sentence.*

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:
I declare that I have no competing interests

Reviewer's report
Title: Alcohol consumption and binge drinking in adolescents: comparison of different migration backgrounds and rural vs. urban residence - a representative study
Version: 1 Date: 4 October 2010
Reviewer: Thomas Heffernan
Reviewer's report:
Article Title: Alcohol consumption and binge drinking in adolescents: comparison of different migration backgrounds and rural vs. urban residence – a representative study
Authors: Donath, C., Gräße, E., et al.
1. Is the question posed by the authors well defined? Yes it is clearly set out in introduction.
2. Are the methods appropriate and well described? Yes, but unsure as to whether this is part of a previously published study (as intimated on page 7 end of paragraph 1. This needs clarifying).

The publication of the design and implementation of the study which was named by reviewer 2 concerns a research report in German which is not disseminated by a publisher nor published in a scientific journal. Research reports are necessary to report on the work financed by public grants.

3. Are the data sound? Yes.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition? Yes.

5. Are the discussion and conclusions well balanced and adequately supported by the data? Yes these are adequately supported by the data presented.

6. Are limitations of the work clearly stated? No – much more needs to be included in the study on limitations, and possibly some areas for future research.

See below

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? I think this needs to be more clearly stated (see comment 2 above).

8. Do the title and abstract accurately convey what has been found? Yes they are fine.

9. Is the writing acceptable? Yes it is clear and well written.

Decision: Major Compulsory Revisions: 1. Need to clearly state whether the work is part of a previously published data set/study and if so, why the current study needs to be published here as a separate set of data. The data we published here in this article have not been reported in this way. The analyses were carried out only for the publication in this manuscript. There was no publication on binge drinking data from this survey and there was not any analysis under the perspective of neither migration background nor urban-rural differences in this detail. There has been one article in a German non-peer-reviewed (!) journal on the general prevalences of the different substances from this study which includes a regression analysis where urban/rural and three migration backgrounds are included as control variables for regular consumption of several drugs.

2. Also need to include a review of major limitations and some suggestions for future research in the field. In the discussion a paragraph on the return rates was included and furthermore the problem of possible underestimation and its implications were addressed. Further limitations and corresponding research needs which were raised include: cross-sectional design, consumption patterns of people with migration background in adulthood and possible starting points for primary and secondary prevention

Overall: A well written and informative study. It appears to add something new to the literature, but the authors need to clarify the novelty of the study (has the data been published previously?)

Tom Heffernan

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
'I declare that I have no competing interests'
Associate Editor's comments:
According to the major point raised by Reviewer 2, authors should state, at least in the cover letter, that the present findings have not been published elsewhere (peer-reviewed journals).
See beginning of the cover letter, page 1

Provide the aims of your study within the background section of your manuscript.  
A section “Aims” was included in the manuscript after the introduction.

Document, within your manuscript, the name of the ethics committee which approved your study.  
The research project was granted by the Federal Ministry of the Interior in Germany, a statement of an ethics committee was not necessary. Instead the survey was audited by each Ministry of Education of every German state (Bundesland) and additionally of every state responsible for data protection. Only in those states where through this procedure the survey was permitted the survey then actually took place. A further ethics committee was not included since the data protection matters were covered by the above described procedure and another intervention besides filling out an anonymous questionnaire was not applied. There was additionally an independent scientific consulting committee who also approved of the questionnaire and the procedure of data acquisition and handling.  
⇒ This paragraph is included at the end of the design section.