

## Alcohol's harm to others: Quantifying a little or a lot of harm

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### Abstract

**Aim:** Harm to others from alcohol consumption has become a World Health Organization research priority and the subject of current or planned research in over 20 countries. The aim of the current study is to compare the efficacy of two measures commonly used to ascertain the subjective level of harm experienced by respondents that is attributable to the drinking of others.

**Design:** A cross-sectional survey.

**Setting:** Australian respondents were recruited using computer-assisted telephone interviewing.

**Participants:** 448 adult respondents were asked about their experience of harm attributable to the alcohol consumption of others.

**Measures:** Respondents were asked whether they were harmed a little or a lot by the drinking of both strangers and heavy drinkers known to them, and were asked to rate this level of harm from 1 to 10. They were also asked questions about the types of harm they experienced.

**Findings:** Overall, respondents were fairly consistent in their responses to these two measures, with the mean score of a little or a lot of harm similar for both stranger and known drinker harms. Prediction of the two types of scores was similar, based on the respondents' experience of harms; however, tangible stranger harm did not predict being harmed a lot.

**Conclusions:** The 1 to 10 score is better predicted by harms experienced; however, this may be due to a lack of variance in the dichotomous question. Equivalence scores are outlined and discussed.

While harms to the drinker stemming from alcohol use are well documented, there has been less research on the harms from alcohol consumption to those other than the drinker. Recently, research has begun to address this gap with studies on collateral damage from alcohol (Giesbrecht, Cukier, & Steeves, 2010), second-hand effects of drinking (Langley, Kypri, & Stephenson, 2003), and externalities from alcohol consumption (Greenfield et al., 2009), as well as funding of research in this area in over 20 countries. Harms attributable to the drinking of others include social, financial, and family harms, as well as physical and verbal assault by a perpetrator who has been drinking (Laslett et al., 2010). This harm can come from strangers or people known to the drinker and can range from minor nuisances, like being annoyed by litter or noise, to harm as serious as physical or sexual assault. Measuring harm from others is difficult (Johansson et al., 2006) and there is little consensus on the best way to go about this (Bloomfield, Hope, & Kraus, 2012; Connor & Casswell, 2012). There is a need for research comparing various measures of social harm from alcohol (Dawson & Room, 2000); we found no research on subjective measurement of harm from others

due to their drinking, likely to the relatively recent rise in interest in this area.

If harm, a latent construct, is being measured as the sum total of individual types of harm experienced, then it will be a formative variable. The level of harm experienced over a given length of time is the sum total of various occurrences of harm, and any attempt to measure a variable with a formative scale is going to be limited by the examples of the construct given (Wanous, Reichers, & Hudy, 1997). For example, if one scale asks about physical assault and another scale does not, then the latent construct that is being measured in the two scales is qualitatively different, as the definition of harm in the first survey includes physical assault but the definition of the second does not. As variations in survey length and cultural context dictate that different items will be used in different surveys, there are advantages to also having a reflective measure of harm that can be compared across contexts.

A reflective measure, asking people to give a rating of the harm that they experienced, is more subjective than a formative measure, but presents less risk of the

operationalization of harm changing as the survey items change. Subjective appraisal of harm is important in its own right, in that it impacts on the harmed person's perceived safety in their surroundings as well as their attitudes towards alcohol. It is worth noting that subjective measures provide value in a range of fields; for instance, subjective measures of trauma predict PTSD after more objective measures of trauma have been controlled for (Bernat, Ronfeldt, Calhoun, & Arias, 1998).

A single-item screening measure of alcohol consumption has demonstrated good sensitivity and specificity to identify unhealthy alcohol use (Smith, Schmidt, Allensworth-Davies, & Saitz, 2009), and single-item measures have also been used to measure broad latent constructs like self-esteem and happiness (Abdel-Khalek, 2006; Robins, Hendin, & Trzesniewski, 2001). It has been argued that complex abstract constructs can best be measured by a global single item, as they allow the respondent to consider all aspects of the construct relevant to them and weight them as relevant to them personally (Nagy, 2002). Furthermore, there are pragmatic advantages to single-item scales, including low respondent burden and easy-to-understand scores (Martinez-Martin, 2010).

This study utilises data from a study on alcohol's harm to others in which respondents were asked to measure on a scale of 1 to 10 how much harm they experienced as a result of others' drinking, and were also asked whether they were harmed a little or a lot. The aim of this study is to examine how respondents calibrate their responses to these two types of questions, which measure harms both from strangers and from people known to the respondent. This will be done by comparing the two types of scores and also by ascertaining how the types of harms experienced by respondents predict each type of harm score.

## Method

### Sample

Data was taken from the follow-up Harm to Others study, a landline-based computer-assisted telephone interview (CATI) in which 1,106 participants were asked about their experiences of being harmed due to the drinking of others. Data collection took place from late 2011 to early 2012 in Australia, and participants were aged 18 or over. The sample from the first harm to others study ( $N = 2,649$ ), collected in 2008, was 41% male with a mean age of 47.76 ( $SD = 16.39$ ). The response rate at Time 1 (35.2%) and the response rate from Time 1 to Time 2 (48%) meant that the sample was no longer representative of the Australian population. However, given the aim of the study—to show how individual respondents calibrate their own experience of harm—this data was considered suitable for the task. Data from the first harm to others study could not be used as the first study did not include two subjective measures of harm.

Of the 1,106 respondents in 2011, 488 stated that they had been harmed by a drinker they knew, a stranger who had

been drinking, or both. These 488 respondents form the sample of the current study. The sample was 62.6% female; respondents were aged between 20 and 88, with a mean age of 50.2 ( $SD = 13.5$ ) years, and 48.9% had consumed five or more drinks at least once in the past twelve months.

## Measures

### Harm scores

Before the questions about specific harms from known drinkers, respondents were asked to list all the heavy drinkers that they currently know in their life and then asked to select the most harmful. Respondents were then asked, "Overall, in the last 12 months, how much has the drinking of [the drinker who harmed you the most] negatively affected you?" with the options of "none," "a little," or "a lot." Those who selected "none" were not considered harmed, resulting in a dichotomous question on the level of harm experienced when those not harmed were included. Respondents who reported harm were then also asked to rate this harm on a scale of 1 to 10. Respondents were also asked "Overall, in the last 12 months, how much has the drinking of strangers or people you don't know very well negatively affected you?" with the same response options for both items.

### Specific measures of harm from the most harmful heavy drinker

Respondents were asked further questions specific to the most harmful heavy drinker in their life. Each item focused on a different harm, and all were framed with this wording: "So, how many times in the last 12 months [did you experience this specific harm] because of their drinking?" The content of the individual items is shown in Table 1. In the current study, these are treated as dichotomous (yes/no) questions, to allow totalling of how many different types of harms were experienced by each respondent.

With regard to the most harmful drinker who was known to them, respondents were also asked, "How many times in the last 12 months did you have to [perform extra tasks] because of their drinking?" The specific tasks were as follows:

- a) Spend time caring for them
- b) Take on extra responsibilities caring for children or others
- c) Clean up after them
- d) Have to take them somewhere or pick them up

A follow-up question, "How much time did this take out of your routine?" made it possible to calculate a continuous measure of hours spent caring.

Finally, respondents were asked to estimate how often the most harmful drinker drank five or more drinks during an occasion, allowing a continuous measure of the number of occasions in the past 365 days.

### Specific measures of harm from strangers

In the case of harm from strangers, two types of harm were totalled: amenity and tangible harms. Tangible harms

involved a direct confrontation between the respondent and the drinker, while amenity harms were harms inflicted by the drinker on people in their general vicinity, rather than being directed at the respondent (Callinan & Room, 2014). The questions on amenity harms in the survey were worded, “How many times in the last 12 months have you [experienced a specific harm]?” while the questions on tangible harms from strangers were worded, “How many times in the last 12 months have you [experienced a specific harm] because of someone’s drinking?” The content of the individual items are shown in Table 1. Once again, these questions were re-coded as yes/no dichotomous questions before being totalled.

### Analysis

Analysis was undertaken with Stata (version 12) (StataCorp, 2011) and all data presented are unweighted. Linear regression models were used to predict the one-to-10 score respondents gave to assess their level of harm. Logistic regression models were used to predict whether a

respondent assessed their harm as “a little” or “a lot” and to predict who, out of those who stated that they were harmed “a little,” gave this harm a score of 6 or higher. Bivariate relationships between the predictors and outcomes are shown in unadjusted models, while multivariate models for all three analyses control for the age and sex of the respondent.

## Results

Within the group of harmed respondents (those who reported that they experienced “a little” or “a lot” of harm, either from the most harmful heavy drinker they knew or from a stranger), the percentage who experienced each individual type of harm is shown in Table 1. While a higher number of females reported being harmed, the percentage of respondents who experienced each individual type of harm was often higher in males than females. The

**Table 1**

*Individual types of harm, and percentage of harmed respondents who reported experiencing them in the past 12 months*

Harm	Male	Female
<b>Harm from drinkers known to the respondent</b>		
Did you have a serious argument that did NOT include physical violence?	53.2	50.6
Did you feel threatened?	26.6	21.2
Were you emotionally hurt or neglected?	56.4	65.1
Did you have to stop seeing them?	35.5	31
Were you put at risk in the car when they were driving?	5.4	4.7
Did they negatively affect a social occasion you were at?	62.8	55.9
Did they fail to do something that they were being counted on to do?	56.4	48.5
Did they break or damage something that mattered to you?	11.7	11.7
Were you physically hurt by them AND/OR were you forced or pressured into sex or something sexual? <sup>a</sup>	9.6	3.5
<i>N</i>	<i>94</i>	<i>171</i>
<b>Harm from strangers or people the respondent does not know very well (tangible harms)</b>		
Been verbally abused	39.9	23.8
Been physically abused AND/OR been involved in a traffic accident AND/OR been forced or pressured into sexual activity <sup>a</sup>	4.9	3.7
Been threatened	26.4	10.8
Been involved in a serious argument	21.5	11.2
<b>Harm from strangers or people the respondent does not know very well (amenity harms)</b>		
Been kept awake at night or disturbed because of someone’s drinking	62.5	63.6
Felt unsafe while waiting for or using public transport because of someone’s drinking	31.9	30.1
Felt unsafe in any other public place because of someone’s drinking	41.6	39.7
Gone out of your way to avoid drunk people or places where drinkers are known to hang out	67.6	59.9
Been annoyed by people vomiting, urinating or littering when they have been drinking	53.2	41.8
Experienced trouble or noise because of drinkers at a licensed venue	34.7	32.7
<i>N</i>	<i>144</i>	<i>214</i>

<sup>a</sup>These items were collapsed to avoid reporting on a cell where  $n < 5$

most common harms from known drinkers were having a social occasion negatively affected or feeling emotionally hurt or neglected, while the most common harms from strangers were being kept awake at night, avoiding drunk people, or being annoyed by drinkers.

**Harm from most harmful known drinker**

Analyses in this section are based on the 246 respondents who stated that they experienced harm because of the drinking of someone they knew, and who answered both questions about their rating of this harm. Of these 246 respondents, the mean number of harm types experienced was 3.3 (*SD* = 2.1) and the mean time spent caring for this drinker was 13.7 (*SD* = 40.5) hours in the previous 12 months. On average, the person the respondents reported to be the most harmful drinker in their lives drank five or more drinks in a session 4.9 (*SD* = 1.7) times per week.

In Figure 1, the percentage of respondents who stated that they were harmed a little (72%) or a lot (28%) for each one-to-10 score is shown. As can be seen, there was less spread in the scores of those who stated they were harmed a lot, with scores ranging from 5 to 10, than in those who stated they were harmed a little, with scores ranging from 1 to 9. The mean score of the 176 respondents who were harmed a little was 3.8 (*SD* = 1.9), while the mean score of the 69 respondents who were harmed a lot was 8.2 (*SD* = 1.4). If it is assumed that “a little” harm would match a score of 1 to 5 and “a lot” of harm would match a score of 6 to 10—that is, if the scores were cut at the midpoints—then 86.5% of respondents would have concordant scores.

Regression models predicting these scores were developed to ascertain what contributed to these two different types of

harm ratings; these are shown in Table 2. The number of harms and the most harmful person’s risky drinking were significant positive predictors of both higher scores and being harmed a lot, in both bivariate and multivariate models. Time spent caring was significant in the bivariate models for both score types, but was not a significant predictor of the one-to-10 score in the multivariate model. Finally, none of these variables were able to differentiate between those respondents who stated they were harmed a little but gave a high score (6 to 10) and those who stated they were harmed a little and gave a low score (1 to 5).

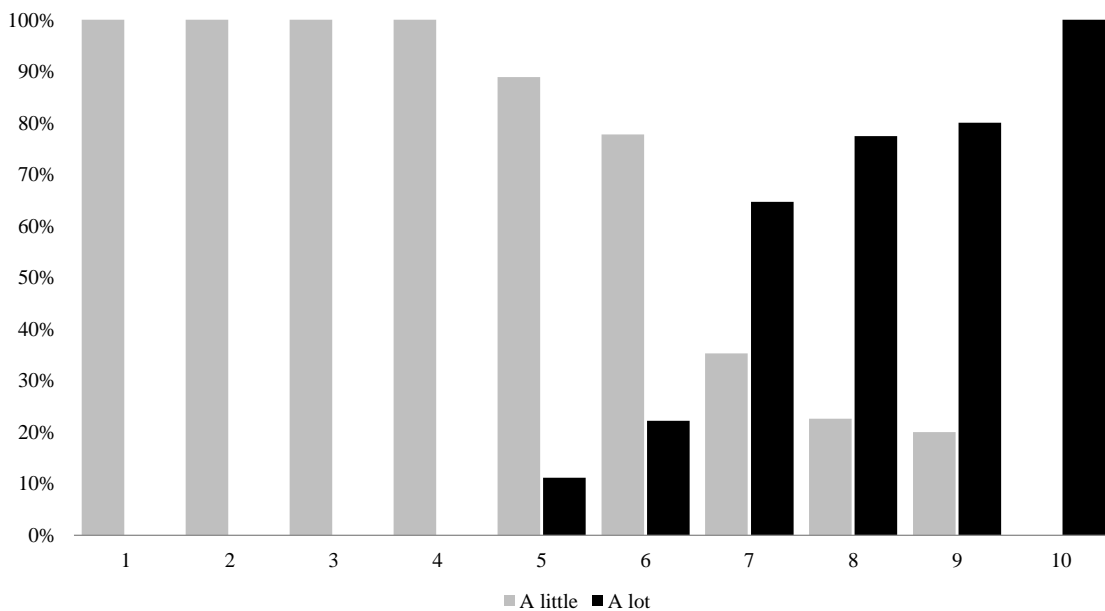
**Harm from Strangers**

These analyses are restricted to the 359 respondents who stated that they experienced harm because of the drinking of strangers. These 359 respondents experienced an average of 2.8 (*SD* = 1.5) amenity harms and 0.6 (*SD* = 1.0) tangible harms in the past 12 months.

In Figure 2, the percentage of respondents who stated that they were harmed a little (92.4%) or a lot (7.7%) for each score is shown. Similar to the harm from known drinkers’ scores, there was less spread in the scores of respondents who reported a lot of harm, with scores ranging from 4 to 10, than in the scores of respondents who reported a little, with scores ranging from 1 to 9. The mean score of the 326 respondents who were harmed a little was 3.0 (*SD* = 1.8), while the mean score of the 27 respondents who were harmed a lot was 8.3 (*SD* = 1.7). If it is assumed that “a little” harm would match a score of 1 to 5 and “a lot” of harm would match a score of 6 to 10—that is, if the scores were cut at the midpoints—then 89.0% of respondents would have concordant scores.

**Figure 1**

*Proportion of respondents stating they were harmed a little or a lot by a drinker they knew, per 1-10 rating of harm*



**Table 2.**

*Prediction of rating of harm from most harmful drinker known to respondent*

	Model 1		Model 2		Model 3	
	UBC	ABC <sup>a</sup>	UOR	AOR <sup>a</sup>	UOR	AOR
Number of harms	0.54***	0.55***	1.70***	1.71***	1.04	1.09
Time spent caring	0.02***	0.01	1.01***	1.01*	1.00	1.00
Most harmful person's risky drinking	0.26***	0.19***	1.19***	1.18***	1.05	1.06

UBC: Unadjusted Beta Coefficients; ABC: Adjusted Beta Coefficients; UOR: Unadjusted Odds Ratios; AOR: Adjusted Odds Ratios.

Model 1. Multiple linear regression model predicting 1–10 harm score

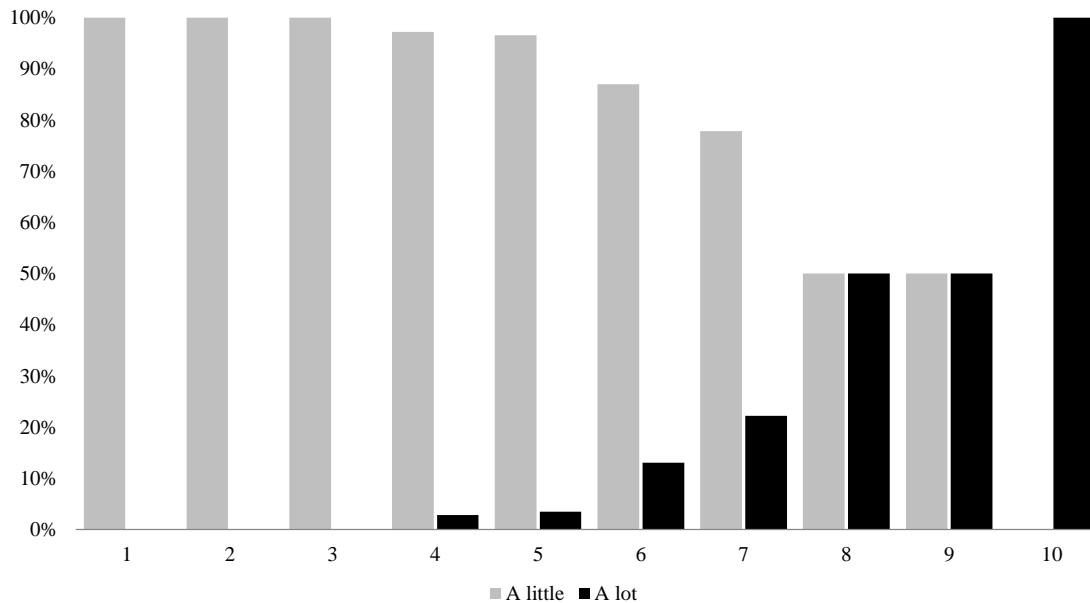
Model 2. Logistic regression model predicting those who were harmed a lot, compared to those who were harmed a little

Model 3. Logistic regression model predicting those who were harmed a little with a score of 6–10, compared to those who were harmed a little with a score of 1–5

<sup>a</sup>Multivariate model including all three variables and controlled for age and sex

**Figure 2**

*Proportion of respondents stating they were harmed a little or a lot by strangers who were drinking, per 1-10 rating of harm*



**Table 3**

*Prediction of rating of harm from strangers*

	Model 1		Model 2		Model 3	
	UBC	ABC <sup>a</sup>	UOR	AOR <sup>a</sup>	UOR	AOR
Number of tangible harms	0.41***	0.38**	1.33	1.35	1.40*	1.44*
Number of amenity harms	0.38***	0.37***	1.54**	1.57**	1.23	1.21

UBC: Unadjusted Beta Coefficients; ABC: Adjusted Beta Coefficients; UOR: Unadjusted Odds Ratios; AOR: Adjusted Odds Ratios.

Model 1. Multiple linear regression model predicting 1–10 harm score

Model 2. Logistic regression model predicting those who were harmed a lot, compared to those who were harmed a little

Model 3. Logistic regression model predicting those who were harmed a little with a score of 6-10, compared to those who were harmed a little with a score of 1–5

<sup>a</sup>Multivariate model including all three variables and controlled for age and sex

Regression models predicting these scores were calculated to identify what contributes to these two different types of harm ratings for stranger harm; these are shown in Table 3. In Model 1, the prediction of the one-to-10 scores shows that both types of harm are positive predictors of harm. Conversely, in the logistic regression models predicting a lot of harm in Model 2, only amenity harms were positive predictors. This may be why tangible harms were a positive predictor of those who gave a harm score of 6 or more despite stating that they were harmed a little, as compared to those who gave a score of 5 or less and said they were harmed a little.

## Discussion

The primary aim of the current study was to examine how well respondents calibrate their responses to two types of questions that subjectively rate the harm they have experienced attributable to the drinking of others. Respondents have fairly similar gauges of what level of harm, scored between 1 and 10, constitutes “a little” or “a lot,” regardless of whether that harm came from a stranger or someone known to them. Fewer people rated their harm from strangers as “a lot” or with a higher score. Overall, the equivalent one-to-10 score of a little harm is 3.5, while the one-to-10 score for a lot of harm is 8.

Another method of evaluating these subjective measures was to see how they related to more objective, checklist-type measures of harm. The “a little or a lot” scoring system appeared to be less sensitive than the one-to-10 score to the harmful drinker’s risky drinking and to tangible harms. However, this could be a reflection of the smaller number of people stating that they were harmed a lot, coupled with the reduced variance available in the dichotomous score.

In defence of the dichotomous measure, in the models comparing those who gave a score of 6 to 10 but rated the harm as “a little” to those who scored 1 to 5 and also rated their harm as “a little” for known harmful drinkers, there was no significant difference in the unadjusted or adjusted models, indicating that the dichotomous score works fairly well. However, in the case of stranger harm, those with the higher one-to-10 score were more likely to experience tangible harms. Since tangible harms may be viewed as more serious harms, this suggests that it would be advisable to use one-to-10 scores where possible. There does appear to be some parity between the two measures, so there is still value in the dichotomous response option.

There were limitations surrounding the sample in the current study that need to be acknowledged. Firstly, as noted in the methods section, the response and attrition rate meant that the sample used in the current study is not generalizable to the Australian population. Fortunately, the focus here was on comparisons within each respondent’s responses. Secondly, the sample size is too small to do further analyses on both types of discordant scores, that is, those who gave a score of five or below and a dichotomous response stating they were harmed “a lot”).

While the limitations of single-item measures are acknowledged, the current study has found that these two single items do correlate with each other, and with the number and type of harms experienced. Therefore, as with studies on self-esteem, alcohol consumption, and happiness (Abdel-Khalek, 2006; Robins, Hendin, & Trzesniewski, 2001; Smith et al., 2009), there is evidence to suggest that a single-item measure is appropriate for harm experienced. As noted, this measure can usefully complement checklist-type measures, and it does not have the drawbacks of more formative measures, such as those used in the harm to others survey, which may not be comprehensive and therefore cannot fully assess harm (Wanous et al., 1997). Future research to check the validity and reliability of these measures could include assessment of their test-retest reliability and development of a reflective multiple-item scale to check the validity of the single-item scales. Furthermore, qualitative research investigating the types of harms that people experience that are yet to be included in current measures would be of great value to the field.

In conclusion, respondents appear to be calibrating their responses about the level of harm they experience when asked to use a dichotomous or linear rating system. On a one-to-10 scale, similarity was found between the mean scores of those who experienced “a little” or “a lot” of harm from strangers and those who reported the same level of harm from drinkers they knew, despite a wide range of scores given by those who stated that they were harmed a little. It is tentatively concluded that the one-to-10 score does seem to differentiate more between more and less serious harms, particularly for harm from strangers; however, the two scores are roughly equivalent.

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## References

- Abdel-Khalek, A. M. (2006). Measuring happiness with a Single Item Scale. *Social Behaviour and Personality*, 34(2), 139–150.
- Bernat, J. A., Ronfeldt, H. M., Calhoun, K. S., & Arias, I. (1998). Prevalence of traumatic events and peritraumatic predictors of posttraumatic stress symptoms in a nonclinical sample of college students. *Journal of Traumatic Stress*, 11(4), 645–664.
- Bloomfield, K., Hope, A., & Kraus, L. (2012). Alcohol survey measures for Europe: A literature review. *Drugs, Education Prevention and Policy, Early Online*. Retrieved from doi:10.3109/09687637.2011.642906
- Callinan, S., & Room, R. (2014). Harm, tangible or feared: Young Victorians' adverse experiences from others' drinking or drug use. *International Journal of Drug Policy*, 25, 401-406.

- Connor, J., & Casswell, S. (2012). Alcohol-related harm to others in New Zealand: Evidence of the burden and gaps in knowledge. *The New Zealand Medical Journal*, 125(1360), 11–27.
- Dawson, D. A., & Room, R. (2000). Towards agreement on ways to measure and report drinking patterns and alcohol-related problems in adult general population surveys: The Skarpö Conference overview. *Journal of Substance Abuse*, 12, 1–21.
- Giesbrecht, N., Cukier, S., & Steeves, D. (2010). Collateral damage from alcohol: implications of 'second-hand effects of drinking' for populations and health priorities. *Addiction*, 105(8), 1323–1325.
- Greenfield, T., Ye, Y., Kerr, W., Bond, J., Rehm, J., & Giesbrecht, N. (2009). Externalities from Alcohol Consumption in the 2005 US National Alcohol Survey: Implications for policy. *International Journal of Environmental Research and Public Health*, 6(12), 3205–3224.
- Johansson, P., Jarl, J., Eriksson, A., Eriksson, A., Gerdtham, U., Hemstrom, O., . . . Room, R. (2006). The social costs of alcohol in Sweden 2002. *Social Research on Alcohol and Drugs* (Vol. 36). Stockholm, Sweden: Stockholm University.
- Langley, J., Kypri, K., & Stephenson, C. R. (2003). Secondhand effects of alcohol use among university students: Computerised survey. *BMJ*, 327, 1023–1024.
- Laslett, A.-M., Catalano, P., Chikritzhs, T., Dale, C., Doran, C., Ferris, J., . . . Wilkinson, C. (2010). *The range and magnitude of alcohol's harm to others*. Canberra, Australia: Alcohol Education and Rehabilitation Foundation. <http://www.fare.org.au/wp-content/uploads/2011/10/The-Range-and-Magnitude-of-Alcohols-Harm-to-Others.pdf>
- Martinez-Martin, P. (2010). Composite rating scales. *Journal of the Neurological Sciences*, 289, 7–11.
- Nagy, M. S. (2002) Using a single-item approach to measure facet job satisfaction. *Journal of Occupational and Organizational Psychology*, 75, 77–86.
- Robins, R. W., Hendin, H., & Trzenniewski, K. H. (2001). Measuring global self-esteem: Construct Validation of a Single Item Measure and the Rosenberg Self Esteem Scale. *Personality and Social Psychology Bulletin*, 27(2), 151–161.
- Smith, P. C., Schmidt, S. M., Allensworth-Davies, D., & Saitz, R. (2009). Primary Care Validation of a Single-Question Alcohol Screening Test. *Journal of General Internal Medicine*, 24(7), 783–788. doi:10.1007/s11606-009-0928-8.
- StataCorp. (2011). *Stata Statistical Software: Release 12*. College Station, TX, United States: StataCorp LP.
- Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall Job Satisfaction: How Good are Single Item Measures? *Journal of Applied Psychology*, 82(2), 247–252.