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Investigation of alcohol-related social norms among youth aged 14-17 years in Perth, Western Australia: Protocol for a respondent-driven sampling study

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Title: Investigation of alcohol-related social norms among youth aged 14-17 years in Perth, Western Australia: Protocol for a respondent-driven sampling study

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Article Summary:

Article focus

- Protocol for a study to investigate the social norms contributing to alcohol consumption among adolescents aged 14-17 years in Perth.
- Use of respondent-driven sampling method (RDS).

Key messages

- Lack of studies which use a similar methodology and that investigate a multitude of alcohol-related normative and attitudinal variables.
- Clarification of the process and pathways facilitating pro-alcohol norm transmission in community settings.
- Inform future community-based interventions aiming to reduce risky drinking in this target group.

Strengths and limitations of this study

- RDS enables examining influence of social connections on drinking behaviour at a group-level.
- Methodology allows randomisation during sampling, resulting in a representative sample of populations through contacts between individuals, and potential to access hard-to-recruit groups.
- Inherent challenges in the recruitment of adolescents and logistics of continuation of referral chain to desired number of recruitment waves.

ABSTRACT

Introduction: Alcohol use among young people is a major public health concern in Australia and internationally. Research elucidating social norms influencing alcohol use supports the desire to conform to peers. However, there is a lack of evidence on how social norms are transmitted from the community to young people and between family members and peers, as previous studies are limited to mainly school and university environments. This paper describes the proposed process to investigate common alcohol-related norms held by 14-17 year olds in Perth, Western Australia, and to clarify the process and pathways through which pro-alcohol norms are transmitted to adolescents.

Methods and analysis:

This cross-sectional quantitative study will use respondent-driven sampling (RDS) to recruit a sample of 672 adolescents from sporting groups, youth programs and the community in Perth. Data will be collected with a previously developed and validated multi-dimensional online survey instrument. A variety of strategies will be explored to aid participation including face-to-face recruitment and survey administration, web-based RDS and a 'mature minor' consent assessment protocol. Data analysis will include descriptive statistics of demographic characteristics, as well as social network and dyadic analyses, to explore the connections between shared understanding of norms and behaviours among individuals, and how these translate into reported practices.

Ethics and dissemination:

This research is expected to extend our understanding of normative development pathways to inform future interventions, and will be widely disseminated through conference presentations, peer reviewed papers, media channels and community seminars. A study reference group of key health industry stakeholders will be established to encourage integration of study findings into policy and practice and results will guide the development

of community interventions. The Curtin University Human Research Ethics Committee has granted approval for this research.

Keywords: Alcohol, social norms, adolescents, networks, respondent-driven sampling (RDS)

INTRODUCTION

Alcohol consumption among young people and adults in Australia[1, 2] and other countries[3, 4] is a leading cause of morbidity and mortality. While many people consume alcohol at low-risk levels, short-term occasiona]l consumption of alcohol at harmful levels is common in the Australian and other cultures, especially for young people.[2, 5] The rate of drinking at harmful levels by young Australians has doubled over the past two decades, with evidence that social expectations and associations may influence risky drinking.[6-9] This group currently experiences the highest occurrence of negative impacts from harmful drinking including road trauma, violence, sexual coercion, falls, drowning and suicide.[10, 11] Comparable data have been published on young people's drinking behaviour in Europe and the United States.[3, 4]

Drinking culture is influenced by a complex range of social influences including norms, habits, customs and images.[2, 5] Alcohol plays a central role in many social occasions, particularly celebrations symbolising for some a 'rite of passage'.[12] As such, there are considerable challenges when attempting to clarify the relative influence of these determinants on adolescent drinking behaviours. A large body of research highlights the role of peers in shaping the normative beliefs and behaviours associated with drinking.[7, 9, 13] A social norm is an expectation about acceptable behaviour that is shared by a group of people.[14] Research investigating alcohol-related norms and interventions using a social norms approach have been school, college or university-based and typically have only addressed myths associated with descriptive (perceived alcohol consumption prevalence) and injunctive norms (perceived approval),[15-19] leaving gaps in the understanding of how social norms are transmitted from the community to individuals and between friends. Further limitations of the literature reviewed[7, 15-29] include lack of understanding of when these norms first manifest in beliefs and attitudes of individuals, the social contexts or networks

which contribute most significantly, and the potential for some networks to be protective against risky alcohol use. In addition, the processes by which youth act on contradictory norms perceived in their environment and the social consequences of non-compliance remain to be understood. Finally, it is not clear how youth with different patterns of attachment to significant referents perceive alcohol-related norms, how connectedness to different elements of a young person's community affects behavioural norms, and how norms transpire within and across different social groups. This study of youth alcohol social norms in Australia will use respondent-driven sampling (RDS) as this methodology allows us to examine the interconnections and interactions between individuals and their social networks.[30, 31] The study's four key hypotheses are:

1. Risky drinking behaviours of individual adolescents are influenced by the behaviours, attitudes and norms of parents, peers and significant others with whom they interact; thus, the nature of connections and type of interactions between individuals will have an effect on the overall levels of risky drinking behaviours.
2. Individuals will perceive that the drinking attitudes and behaviour of their peers is closely related to their own drinking attitudes and behaviour. Thus, those who are identified as having high levels of alcohol consumption will report higher levels of alcohol consumption among their peers compared to individuals who report low levels of alcohol consumption.
3. Adolescents with lower degrees of attachment to community will report conflicting injunctive norms (those of the reference group compared to the generalised population) and higher levels of alcohol use.
4. Adolescents with strong associations to others who are drinking at risky levels will report conflicting injunctive norms (those of the reference group compared to the generalised population).

METHODS AND ANALYSIS

Study objectives

The objectives of this research are to (i) identify common alcohol-related norms held by adolescents aged 14-17 years; (ii) test hypotheses 1-4; (iii) clarify the process and pathways through which pro-alcohol norms are transmitted to adolescents aged 14-17 years; (iv) identify the influence of exposure to environmental factors (e.g. pro-alcohol messages in the media) on adolescent norm development; and (v) describe the characteristics of social networks that contribute to the transmission of alcohol norms.

Conceptual framework

The international literature highlights the central role of social processes in alcohol consumption practices.[9, 32-35] To address the limitations of the research literature as identified previously, a more comprehensive view of the adolescent social context is required which encompasses a range of reciprocal influences between an individual and their environment on subsequent behaviour. Understanding of the development of drinking behaviours and identification of potential for behaviour change is facilitated by consideration of social theories. Social Cognitive Theory[36] guided the design of a data collection instrument developed and validated for this study (discussed elsewhere[37]). It will guide the RDS study by providing an underpinning conceptual framework, generating the research hypotheses and identifying the social cognitive interactive elements to be examined.

Methodology

Using an instrument developed by the research team,[37] this study will examine the social interaction on drinking behaviour at the group-level, taking into account the influence of varying social connections and associated norms and sanctions. This study will utilise

respondent-driven sampling (RDS), a peer referral method, to recruit a cross-sectional cohort of adolescents. In RDS, recruitment is initiated with a small number of primary participants ('seeds') while continued recruitment relies on a coupon referral system, whereby each participant refers a limited number of members of their social networks to the study, creating 'referral chains' or 'waves'.[31] These 'waves' allow analysis of the characteristics of connections between participants and how they influence the formation of knowledge, beliefs, attitudes and behaviours.[30, 31, 38] The initial sampling frame is often constructed by identifying existing community groups or organisations which have access to the target populations and selecting the primary participants in a non-random manner.[31, 39] Strengths of RDS include the ability to capture representative samples of populations through contacts between individuals, including the potential to access hard-to-access/recruit groups.[40] A mathematical model is used to compensate for non-random recruitment, to assist in eliminating bias that purposeful selection of seeds could introduce.[38, 41] RDS allows sampling randomisation, validity and reliability of results,[40] and compared to other recruitment methods, better performance when the activity being studied can be associated with stigma.[38] This methodology has been increasingly and successfully used to investigate young people's risk taking behaviour including sexual behaviour,[42] drug use,[43] driving behaviour,[44] and exploitation[45] in a number of countries[40, 42, 43, 46] and settings.[44-46] Limitations of RDS include the potentially high rate of data collection requiring substantial resources in terms of costs and personnel as well as difficulty engaging young people in the research.[47]

Research setting

The research will occur within the Perth metropolitan region, Western Australia (WA). The study area accounts for approximately 78% of the Western Australian population, and 11% of

Australia's overall population.[48] We will recruit participants in the general community (e.g. public locations, shopping centres, skate parks, sports/leisure centres, public events) and through local community-based youth programs and sports clubs. The selection of out-of-school settings for this study creates an opportunity to capture data in a range of locations with the potential for greater diversity of referrals and allowing access points to young people clustering in their friendship groups beyond school. In addition, there are conflicting results published on the nature of connection to sports groups in terms of their protective or risk enhancing potential.[49-51] Recruiting participants from these sites will allow further clarification of the role of community youth sports clubs and programs in promoting or preventing involvement in risky drinking.

Research team

A reference group convened for this project will consist of both researchers and key health industry stakeholders; the latter representing alcohol-related and youth-related governmental and non-governmental services, including senior officials from health, education and police departments as well as sports federation. Group members will provide expertise in the form of research direction, ensuring rigour, management of ethical considerations, and assistance in identifying sources of potential seeds and the dissemination of results. At the conclusion of the study, the reference group will be instrumental in integrating the study findings into policy, practice and education. Final year undergraduate and graduate students with public health-related degrees who will receive training as data collection officers will recruit the participants and administer the survey.

Sample selection

Eligible to participate in this study are adolescents aged between 14 and 17 years, who reside in Perth, WA, are in possession of a valid referral coupon, have not previously participated in the study, and are able to provide informed consent to participate as determined by an assessment of maturity screening protocol further described in the *Recruitment* section.

Sample size

Previous data indicate that the minimum prevalence of under aged drinking at risky levels is approximately 30%.[52] Participant recruitment will continue until at least 672 participants are recruited from the target group. This sample size will allow for 95% confidence in estimating the prevalence of risky drinking, with an accuracy of ±5% and a recommended design effect of two.[53, 54] Beginning with 32 seeds, if each study participant successfully recruits on average two respondents, the desired sample size of 672 will be reached in about five consecutive waves, which is expected to be achieved within 12 months.[31]

Recruitment

Sample frame

Evidence from population and household surveys by the Australian Bureau of Statistics will be used to estimate the total population of youth. A review of this data will include age, distribution across different suburbs and participation in sports and out-of-school activities. In addition, a list of existing youth sports groups and community programs, locations and events where youth can be accessed in the community will be compiled for seed recruitment. Details of each youth program and sports group such as a contact person, location, point of access and the number of possible seeds, will be compiled and followed up. Further to this, prioritisation based on potential to provide the required quota of characteristics and number

of seeds, while representing a wide spread of socio-demographic and program types will take place.

Seed selection and referral recruitment

Initial recruitment will be via 32 seeds recruited by study staff. Selected seeds will be well-connected members of a sporting group, youth program or the community, ensuring their capacity to make initial referrals of their peers to the study as part of their own participation. Seed selection will occur purposively, and interested youth will be recruited as primary participants if they fill a vacant spot in the seed distribution matrix (see Table 1) by meeting the specific gender, age and classification criteria (e.g. involvement in a community sports club, or a youth program). Multiple strategies will be used to recruit seeds including presentations at youth programs and sports clubs to introduce the study and encourage participation; newsletter advertising; word-of-mouth and intercept surveys at shopping centres and local youth-focused community events. A new seed will be engaged to re-launch recruitment when a recruitment chain ceases before the desired five waves are reached.

Table 1: Distribution of initial seed selection

Organisation	**Characteristics and number of seeds**							
	14 years		15 years		16 years		17 years	
	m	f	m	f	m	f	m	f
Sports clubs	1	1	1	1	1	1	1	1
Youth programs	1	1	1	1	1	1	1	1
Community	2	2	2	2	2	2	2	2

Each person recruited and enrolled in the study will meet with a staff member at a time and public place convenient to the participant, at which they will complete an online survey on a tabloid device. Following survey completion, they will receive three referral coupons with unique identifying numbers to recruit their peers into the study. Referral coupons are an essential part of the study design as each uniquely number coded coupon will be the only means to link participants within referral networks. Participants will use the coupons to recruit up to three of their peers, defined as friends or relatives aged 14-17 years and living in the Perth metropolitan area, into the study. Referred participants will then contact the study team and will be enrolled if eligible. Distribution of coupons will occur within two weeks, with a follow-up contact via telephone to monitor this process and enquire about reasons for not distributing coupons or coupon refusals.

RDS depends on a referral process, hence an immediacy of response is desirable for this method to be successful and removing barriers to participation is critical. One major barrier envisioned in this study is the requirement for parental consent for minors. Thus, to ensure wider participation and that a broader and more representative sample can be achieved, this study has received a waiver for parental consent for 'mature minors'. In accordance with the National Statement on Ethical Conduct in Human Research guidelines,[55] only adolescents aged 14-17 years who exhibit cognitive maturity and capacity to give informed voluntary consent will be interviewed for this study. Similar techniques of cognitive pretesting have been reported in the health literature.[56-58]

Initial face-to-face survey administration will serve the purpose of trialing the RDS process and resources. Depending on the rate of data collection and feasibility of the mature minor screening assessment other data collection strategies will also be explored to increase reach and interactions with youth. This may include web-based RDS whereby participants

will be able to make referrals online via email, text messaging and their social networking sites (e.g. Facebook, Twitter).[47]

According to previous research, incentives are an essential and ethically supportable way of maximising referrals for data collection efficiency.[30] A system of double incentives will be employed: participation reimbursement in the form of a $15 electronic store gift voucher awarded after completion of the interview, as well as referral incentives of a $10 electronic store gift voucher awarded to the participant after a referral's survey completion. The incentives provided are modest and lower than what has been provided in other RDS studies with youth.[30, 47]

Data analysis

Data will be collected for each participant on socio-demographics, drinking behaviours, experience of alcohol-related harms, drinking intentions and attitudes, alcohol expectancies and access, descriptive and injunctive norms, perceived social sanctions, alcohol promotion through media, social connectedness and group identity. Analyses will explore the connections between individuals, their shared understanding of norms and behaviours, and how these shared understandings are translated into reported practices. Data analysis will include descriptive statistics of demographic characteristics, social network analysis, and dyadic analyses. The analyses will be carried out in two directions, the first of which is individual-level indicators of alcohol use. RDS data analysis allows estimation of population indicators that describe a broader population. Analysis of the social network will access male and female adolescents from the two different age groups (14-15 years and 16-17 years) to determine if and when changes in attitudes, beliefs and social norms occur. Secondly, dyadic analyses whereby each dyad (participant and their referral) will provide information about both adolescents' perceptions of behavioural norms will be conducted. The extent of

concordance in perceived behavioural norms will be further analysed with respect to the type of dyadic connections. In the case of similar characteristic dyads, for example sporting focused adolescents, we will also measure the relationship between the concordance of behavioural norms and reported alcohol practices beliefs and values. As a measure of diffusion of norms through the referral chains, the agreement in perceived behavioural norms will also be explored according to the degree of distance (direct connection, separated by one, two or more persons between participants within the chain of referral).

ETHICS AND DISSEMINATION

This research has received approval from the Curtin University Human Research Ethics Committee, including a waiving of the requirement for parental consent by ensuring only participants who are assessed as 'mature minors' will be included in the study (reference HR-25/2012). Core principles of national research ethics[55] have been addressed, whereby safety, welfare and confidentiality of participants will be ensured. The RDS method employs stringent confidentiality and ethical safeguards, such as no undue influence by researchers, peer initiated recruitment, informed consent, coded identification of participants and modest incentives.[30, 31] Confidentiality procedures will include delinked data collection; direct entry of de-identified data into the computer system; interview locations selected with particular care for participants' privacy and safety; and encrypted data storage on secure computers. Project personnel will be trained by the Research Manager to administer the questionnaire via a standardised protocol that will include participant eligibility, confidentiality, ethical consent, interview administration, referral process, administering incentives and reporting practices. Training will be delivered face-to-face in groups prior to the data collection as well as on an ongoing basis.

Each participant will be informed of the voluntary nature of the study, their right to withdraw at any time and maintenance of anonymity of the data. A letter explaining the nature of the study and the associated ethical considerations and rights will be sent to the recruits' parents via the subject on request. All dealings with participants will be undertaken at an age-appropriate level of communication, ensured through piloting of the questionnaire instrument and training of interviewers. In addition, an adverse response protocol will be developed to manage mental health concerns in the form of distress or anxiety during an interview.

To our knowledge, this will be the first study to investigate the development and transmission of alcohol-related norms among adolescents in the community as opposed to an isolated school or university context. As such, evidence gained clarifying the characteristics of social networks that contribute to alcohol use is expected to facilitate development of effective intervention strategies to reduce risky drinking behaviours among youth in out-of-school settings. Further, it is anticipated that awareness raised and key points of interest revealed through the explorations that this study undertakes will result in continued and enhanced health outcomes for young people.

The dissemination of results will involve several stages and strategies: (i) dissemination of study findings to health professionals, academics, reference group and other stakeholders through local, national and international conference presentations, and peer-reviewed papers; (ii) integration of the findings via the reference group and other stakeholders, for example via agency workshops and community seminars to encourage integration of study findings into policy, practice and education; (iii) dissemination of the survey instrument developed as part of this study for use by other researchers; and (iv) utilisation of the instrument to evaluate community and organisation assessments of youth alcohol norms and to assist with the development of tailored interventions.

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Competing interests

No declared conflicts of interest.

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Ethics approval

Curtin University Human Research Ethics Committee [approval number: HR-25/2012].

Contributions

BM, PH, SB, SD, SA and RL designed the study. JH led the design of the study implementation protocol and drafted the manuscript. SD was responsible for the sample size and power calculations and development of proposed statistical analyses. All authors critically revised the manuscript, and approved the final version of the manuscript.

Provenance and peer review

Not commissioned; internally peer reviewed

REFERENCES

1. Australian Institute of Health and Welfare [AIHW]. 2010 *National Drug Strategy Household Survey Report*. Drug Statistics Series No. 25.Canberra: AIHW, 2011.
2. National Preventative Health Taskforce. *Technical Report No 3, Preventing Alcohol-related Harm in Australia: A window of opportunity*. Canberra: Commonwealth of Australia, 2009.
3. Centers for Disease Control and Prevention [CDC]. *Youth Risk Behavior Surveillance - United States, 2011*. Morbidity and Mortality Weekly Report, Surveillance Summaries. U.S. Department of Human Services, 2012.
4. European Monitoring Centre for Drugs and Drug Addiction. *Summary 2011 ESPAD Report, Substance use among students in 36 European countries*. Luxembourg: Publications Office of the European Union, 2012.
5. Cortese G. Identities, subjectivities and language in juvenile alcohol issues. *Int J Children's Rights* 2010;18(2):233-52.
6. Zufferey A, Michaud P, Jeannin A, *et al*. Cumulative risk factors for adolescent alcohol misuse and its perceived consequences among 16 to 20 year old adolescents in Switzerland. *Prev Med* 2007;45:233-9.
7. Stappenbeck CA, Quinn PD, Wetherill RR, *et al*. Perceived norms for drinking in the transition from high school to college and beyond. *JSAD* 2010;71[6):895-903.
8. Svensson M. Alcohol use and social interactions among adolescents in Sweden: Do peer effects exist within and/or between the majority population and immigrants? *Soc Sci Med* 2010;70(11):1858-64.
9. Corbin WR, Iwamoto DK, Fromme K. Broad social motives, alcohol use, and related problems: Mechanisms of risk from high school through college. *Addict Behav* 2011;36(3):222-30.

10. Australian Institute of Health and Welfare [AIHW]. 2007 *National Drug Strategy Household Survey: Detailed findings*. Cat. No. PHE 107. Canberra: AIHW, 2008.

11. Australian Institute of Health and Welfare [AIHW]. *Young Australians: Their health and wellbeing 2011*. Canberra: AIHW; 2011.

12. Fry M, Dann L. *Social drinking and social norms: alcohol consumption and drink driving among young adults in Australia*. The La Londe Conference in Marketing Communications and Consumer Behaviour, 7-10 June 2005. La Londe les Maures, France: Aix Graduate School of Business; 2005:29-39.

13. Bot S, Engels R, Knibbe R, *et al*. Friend's drinking behaviour and adolescent alcohol consumption: the moderating role of friendship characteristics. *Addict Behav* 2005;30:929-47.

14. Liefbroer AC, Billari FC. Bringing norms back in: a theoretical and empirical discussion of their importance for understanding demographic behaviour. *Popul Space Place* 2010;16(4):287-305.

15. Cleveland MJ, Hultgren B, Varvil-Weld L, et al. Moderation of a parent-based intervention on transitions in drinking: Examining the role of normative perceptions and attitudes among high- and low-risk first-year college students. *Alcohol Clin Exp Res* 2013. doi: 10.1111/acer.12126.

16. Moreira MT, Oskrochi R, Foxcroft DR. Personalised normative feedback for preventing alcohol misuse in university students: Solomon three-group Randomised Controlled Trial. *PLoS ONE* 2012;7(9): e44120. doi:10.1371/journal.pone.0044120

17. Moore GF, Williams A, Moore L, *et al*. An exploratory cluster randomised trial of a university halls of residence based social norms marketing campaign to reduce

alcohol consumption among 1st year students. Substance Abuse: *Treat Prev Policy* 2013;8(15). doi: 10.1186/1747-597X-8-15.

18. Brooks-Russell A, Simons-Morton B, Haynie D, *et al*. Longitudinal relationship between drinking with peers, descriptive norms, and adolescent alcohol use. *Prev Sci* 2013:1-9, April 07, 2013 (Epub ahead of print).

19. DeMartini KS, Prince MA, Carey KB. Identification of trajectories of social network composition change and the relationship to alcohol consumption and norms. *Drug Alcohol Depen* 2013;132(1-2):309-15

20. Borsari B, Carey KB. Descriptive and injunctive norms in college drinking: a meta-analytic integration. *JSAD* 2003;64(3):331-41.

21. Reed MB, Lange JE, Ketchie JM, *et al*. The relationship between social identity, normative information, and college student drinking. *Soc Influence* 2007;2(4):269-94.

22. Lewis MA, Neighbors C. Social norms approaches using descriptive drinking norms education: A review of the research on personalized normative feedback. *J Am Coll Health* 2006;54(4):213-8.

23. Lewis MA, Neighbors C. Gender-specific misperceptions of college student drinking norms. *Psych Addict Behav* 2004;18(4):334–9.

24. Lewis MA, Neighbors C. Optimizing personalized normative feedback: The use of gender-specific referents. *JSAD* 2007;68(2): 228-37.

25. Urberg KA, Luo Q, Pilgrim C, *et al*. A two-stage model of peer influence in adolescent substance use: individual and relationship-specific differences in susceptibility to influence. *Addict Behav* 2003;28(7):1243-56.

26. Dams-O'Connor K, Martin JL, Martens MP. Social norms and alcohol consumption among intercollegiate athletes: The role of athlete and nonathlete reference groups. *Addict Behav* 2007;32(11):2657-66.

27. Pedersen E, Neighbors C, LaBrie JW. College students' perceptions of class year-specific drinking norms. *Addict Behav* 2010;35(3):290-3.

28. Prins JC, Donovan JE, Molina BS. Parent-child divergence in the development of alcohol use norms from middle childhood into middle adolescence. *JSAD* 2011;72(3):438-43.

29. Kobus K, Henry D. Interplay of network position and peer substance use in early adolescent cigarette, alcohol, and marijuana use. *J Early Adolescence* 2009;30(2):225-45.

30. Semaan S, Santibanez S, Garfein RS, *et al*. Ethical and regulatory considerations in HIV prevention studies employing respondent-driven sampling. *Int J Drug Policy* 2009;20(1):14-27.

31. Johnston L, Sabin K. Sampling hard-to-reach populations with resopndent driven sampling. Methodol Innov Online 2010;5(2):38-48.

32. Arbour-Nicitopoulos KP, Kwan MYW, Lowe D, *et al*. Social norms of alcohol, smoking, and marijuana use within a Canadian university setting. *J Am Coll Health* 2011;59(3):191-6.

33. Bewick BM, West R, Gill J, O'May F, *et al*. Providing Web-based feedback and social norms information to reduce student alcohol intake: A multisite investigation. *J Med Internet Res* 2010;12(5).

34. Cail J, LaBrie JW. Disparity between the perceived alcohol-related attitudes of parents and peers increases alcohol risk in college students. *Addict Behav* 2010;35(2):135-9.

35. Dal Cin SD, Worth KA, Gerrard M, *et al*. Watching and drinking: Expectancies, prototypes, and friends' alcohol use mediate the effect of exposure to alcohol use in movies on adolescent drinking. *Health Psych* 2009;28(4):473-83.

36. Bandura A. *Social foundations of thought and action: A social cognitive theory*. Prentice Hall, 1986.

37. Hildebrand J, Maycock B, Burns S, et al. Design of an instrument to measure alcohol-related psychosocial influences in the development of norms among 13-year-old to 17-year-old adolescents. *BMJ Open*. 2013;3(e003571).

38. Hathaway A, Hyshka E, Erickson PG, *et al*. Whither RDS? An investigation of Respondent Driven Sampling as a method of recruiting mainstream marijuana users. *Harm Reduct J* 2010;7(15).

39. Semaan S. Time-Space Sampling and Respondent-Driven Sampling with hard-to-reach populations. *Methodol Innov Online* 2010;5(2):60-75.

40. Shahmanesh M, Wayal S, Cowan F, *et al*. Suicidal behavior among female sex workers in Goa, India: The silent epidemic. *Am J Public Health* 2009;99(7):1239-46.

41. Abdul-Quader A, Heckathorn D, Sabin K, *et al.* Implementation and analysis of Respondent Driven Sampling: Lessons learned from the field. *J Urban Health* 2006;83(1):1-5.

42. Liu HJ, Liu H, Cai YM, *et al*. Money boys, HIV risks, and the associations between norms and safer sex: A respondent-driven sampling study in Shenzhen, China. *AIDS Behav* 2009;13(4):652-62.

43. Lomba L, Apóstolo J, Mendes F. Drugs and alcohol consumption and sexual behaviours in night recreational settings in Portugal. *Adicciones* 2009;4(21):4.

44. Blay N, Calafat A, Juan M, *et al*. Violence in nightlife environments and its relationship with the consumption of alcohol and drugs among young Spaniards. *Psicothema* 2010;22(3):396-402.

45. Bjørkhaug I, Hatløy A. Utilization of respondent-driven sampling among a population of child workers in the diamond-mining sector of Sierra Leone. *Glob Public Health* 2009;4(1):96-109.

46. Gwadz MV, Cleland CM, Quiles R, *et al.* CDC HIV testing guidelines and the rapid and conventional testing practices of homeless youth. *AIDS Educ Prev* 2010;22(4):312-27.

47. Bauermeister JA, Zimmerman MA, Johns MM, et al. Innovative recruitment using online networks: lessons learned from an online study of alcohol and other drug use utilizing a web-based, Respondent-Driven Sampling (webRDS) strategy. *JSAD* 2012;73(5):834-8.

48. Australian Bureau of Statistics [ABS]. *Regional Population Growth, Australia, 2011-12*. Cat. No. 3218.0. Canberra: ABS, 2013.

49. Kingsland M, Wolfenden L, Rowland BC, *et al*. A cluster randomised controlled trial of a comprehensive accreditation intervention to reduce alcohol consumption at community sports clubs: Study protocol. *BMJ Open* 2011;1(2):1-9.

50. Lisha NE, Sussman S. Relationship of high school and college sports participation with alcohol, tobacco, and illicit drug use: A review. *Addict Behav* 2011;35(5):399-407.

51. McGee R, Williams S, Howden-Chapman P, *et al*. Participation in clubs and groups from childhood to adolescence and its effects on attachment and self-esteem. *J Adolescence* 2006;29(1):1-17.

52. Griffiths P, Kalic R, Gunnell A. *Australian School Survey 2008: Western Australian Results*. Perth: Drug and Alcohol Office, 2009.

53. Salganik MJ. Variance estimation, design effects, and sample size calculations for respondent-driven sampling. *J Urban Health* 2006;83(7 SUPPL.).

54. Salganik MJ, Heckathorn DD. Sampling and estimation in hidden populations using respondent-driven sampling. *Sociol Methodol* 2004;34:193-239.

55. National Health and Medical Research Council. *National Statement on Ethical Conduct in Human Research.* Canberra: Australian Government, 2007.

56. Arora A, Rajagopalan S, Shafiq N, *et al*. Development of tool for the assessment of comprehension of informed consent form in healthy volunteers participating in first-in-human studies. *Contemp Clin Trials* 2011;32(6):814-7.

57. Brody JL, Waldron HB. Ethical issues in research on the treatment of adolescent substance abuse disorders. *Addict Behav* 2000;25(2):217-28.

58. Willis G. Cognitive interviewing as a tool for improving the informed consent process. *J Empir Res Hum Res Ethics* 2006;17(3):31-24.