POLICY
Changing Parental Behaviour to Reduce Risky Drinking Among Adolescents: Current Evidence and Future Directions

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Abstract — Aims: Risky drinking among young people is an issue of public concern globally. In Australia and elsewhere, there has been a steady increase in alcohol-related harms among young people in recent years. The aims of this study were to review the nature of parental supply of alcohol to adolescents aged 13–17 years, explore parental social networks as a potential avenue for intervention, and propose future directions for research with a view to informing public policy and the development of interventions to reduce risky drinking. Methods: Narrative review. Results: While a large literature exists concerning parental influence on children’s drinking, exploration of the volume of alcohol and context of parental supply is lacking. Results from cross-sectional and longitudinal studies on the impact of parental factors such as monitoring, rule setting, alcohol supply and supervision of drinking present an unclear picture. Consequently, translation of research findings into advice for parents is problematic. Conclusion: We propose that future research seeks to (a) gain a better understanding of the volume and contexts of parental supply of alcohol, (b) explore the structure of social networks among adolescents and their parents, (c) determine the accuracy of parents’ perceptions of other parents’ behaviours and beliefs, (d) develop an analytic approach for quantifying aspects of parental networks and (e) evaluate low-intensity parental interventions including web programmes.

INTRODUCTION
Risky drinking among young people is a matter of public concern globally. The European School Survey Project on Alcohol and Other Drugs (ESPAD) reported results from 35 European countries, finding that on average, 15–16-year-olds drank 60 g of pure alcohol (six Australian standard drinks) on their last drinking occasion (Hibell et al., 2004). In Australia, in 2005, a third to half of 15–17-year-olds reported drinking at risky levels (seven or more standard drinks on one occasion for males) at least weekly (AIHW, 2005). Risky or heavy episodic drinking among adolescents has occurred historically in many Nordic and Central and Western European countries, and is becoming increasingly prevalent in Southern European countries which have traditionally been characterized by more moderate episodic drinking (Jarvinen and Room, 2007; Kuntsche et al., 2011a). Risky drinking is associated with a substantial burden of alcohol-related harm; negative social consequences, violence, intentional and unintentional injury, risky sexual behaviour and neuropsychiatric conditions (Anderson, 2007; Rehm et al., 2009). In Australia, while trends in alcohol consumption estimated from various national and state (Victorian) surveys are inconsistent (AIHW, 2005; Victorian Government, 2005; White and Smith, 2006), alcohol-related harms recorded in hospital and emergency department data more consistently show increases in recent years (Livingston, 2008).

Australia has a minimum purchase age of 18 years and, as in many countries, no legal minimum age for drinking per se. By age 12, 75% of the population have tried alcohol, and from age 14 an increasing proportion report more frequent (last week or last month) use (White and Smith, 2009). Accordingly, we focused our review on adolescents aged 13–17 years to capture those at the age at which drinking in social situations (beyond sips and tastes provided by parents) is likely to begin, and while purchase of alcohol (if not drinking per se) remains illegal. While evidence on the long-term consequences of adolescent alcohol consumption and its impact on adult health and wellbeing is inconclusive (McCambridge et al., 2011), the high prevalence of alcohol-related harm during late adolescence makes this a potentially important point for intervention. A variety of terms are used to describe drinking behaviour and patterns of drinking. Here, we use the term risky drinking to encompass the consumption of large amounts (more than four standard drinks) of alcohol on a single occasion, as well as drinking in situations likely to result in harm for young people.

The environmental factors that determine an adolescent’s propensity to engage in risky drinking may be classed as social (including community, cultural, marketing and economic influences), peer or family/parental. Children are exposed to, and learn about alcohol from an early age from their parents and families, the wider community and the media. Children recognize alcoholic beverages and develop an attitude towards alcohol from as early as pre-school (Noll et al., 1990). While there is a shift in emotional attachment during early adolescence and an increase in the importance of peer approval (Harris, 1998; Patton et al., 2004; Carter et al., 2007), there is evidence to support the continuing influence of parents on development (Steinberg, 2001) through late adolescence and into early adulthood (Carter et al., 2007; Turrisi and Ray, 2010). Evidence suggests that positive family relationships and parental behaviours have the capacity to directly influence the drinking choices and behaviours of adolescents, as well as their choice of peer group (Engels et al., 2007) and thus the influence of peers on drinking behaviour (Bauman and Ennett, 1996).

Ryan et al. (2010) conducted a systematic review of longitudinal studies investigating parenting factors associated with adolescent drinking, in an attempt to identify strategies to
help parents implement guidelines for drinkers under 18 years of age. Several parenting variables were found to predict delayed alcohol initiation and reduced levels of later drinking. In this review, each of 12 parenting factors was examined separately and P-values were combined using Stouffer’s method (described in Chen, 2011) to determine the predictive power of each. Key parental factors influencing either initiation, later drinking or both, included parental modelling (initiation and later use), disapproval of adolescent drinking (P < 0.0001 for later use), general discipline (initiation and later use), provision of alcohol (initiation and later use), parental monitoring (initiation and later use), parent–child relationship quality (initiation and later use), parental support (later use), parental involvement (initiation) and general communication (initiation and later use) (Ryan et al., 2010).

There is debate about the onset of alcohol consumption and advice to parents on delaying the age of initiation. Epidemiological evidence supports the notion that the age of initiation of alcohol use is associated with the risk of alcohol-related problems (Warner et al., 2007) but it seems that the risk factors for drinking alcohol per se differ from those for drinking at risky levels and developing alcohol-related problems (Clapper et al., 1995; Donovan and Molina, 2008). Some evidence suggests that the age of first drunkenness is more important than the age of first drink in predicting a progression to heavy drinking (Donovan and Molina, 2008; Kuntsche et al., 2011b) and the number of episodes of intoxication prior to age 16 has been found to be a strong predictor of adult alcohol problems (Clapper et al., 1995).

The complex influences upon adolescent drinking onset and patterns are difficult to study. Much of the existing literature has examined individual factors, and has not adequately investigated the context of alcohol consumption. Marked differences are likely to occur in the progression of alcohol use among adolescents introduced to small amounts of alcohol in the home, as opposed to initiating drinking outside the home, which is often associated with larger amounts of alcohol being consumed (Hellandsjo Bu et al., 2002; Donovan and Molina, 2008).

Here, we focus on just one of the factors that contribute to parental impact upon children’s drinking behaviour. The supply of alcohol to children (in particular, those below the legal alcohol purchase or drinking age) by their parents (hereafter referred to as parental supply) is itself a complex issue influenced by a range of personal and social factors. This review explores the parental supply literature, and investigates the association between the volume and context of parental supply and alcohol initiation. We then explore possible targets for intervening with parents to reduce potentially risky supply.

PARENTAL SUPPLY OF ALCOHOL

While a number of observational studies have identified associations between adolescent behaviours and the availability of alcohol in the home (Komro et al., 2007; Spijkerman et al., 2008; Eijnden et al., 2011), parental rules regarding alcohol (Barnett et al., 2002; Thomsen et al., 2006; Spijkerman et al., 2008), and parental provision of alcohol (Komro et al., 2007), the risk arising from parental supply of alcohol is not well understood. Guidelines and policies in many countries encourage parents to delay their children’s initiation to alcohol (NHMRC, 2009; BCMHS, 2010) or provide high levels of supervision of drinking to ‘dampen the progression to problem use’ (Van Der Vorst et al., 2010). These guidelines are, however, based on limited evidence and mixed research findings which, in some cases, contradict the laws regarding purchase and supply. While minimum age of purchase ranges from 16 to 21 in various countries, these laws often do not proscribe drinking per se (WHO, 2004). In most states of Australia, secondary supply laws indicate that parents, guardians or adults who have the permission of a parent or guardian can supply alcohol to individuals under 18 years of age in a private setting. These seem inconsistent with the Australian National Health and Medical Research Council guideline that for people under 18 years of age, ‘not drinking alcohol is the safest option, and is particularly important for children under 15 years, while for young people aged 15–17 the safest option is to delay the initiation of drinking for as long as possible’ (NHMRC, 2009).

The research that does exist regarding parental supply of alcohol comes from a limited number of cross-sectional and some longitudinal studies. Van Der Vorst et al. (2010) studied youth in the Netherlands, in a longitudinal, multi-informant study using data from mothers, fathers and two adolescent siblings, and reported that no differences existed in the progression to problem drinking among youth whose parents provided high versus low levels of supervision of alcohol use. It was concluded that adolescent alcohol consumption increases over time regardless of the setting or who they drink with. The authors recommended increasing parents’ awareness of their role in delaying the age of drinking onset. Similarly, in a comparative repeated measures study, over three survey years, between youth in states of the USA and Australia, McMorris et al. (2011) reported that adult-supervised use mediated an increased risk for subsequent alcohol use and alcohol-related harms. In this study, data collections were limited to youth only, though some evidence does exist to suggest that the report of adolescents may be more accurate than that of parents in this context (Kypri et al., 2005). As is the case in many studies, McMorris et al. failed to quantify the volume of alcohol consumed, rather asking about the frequency of having had ‘more than a few sips’ of alcohol. This measure is somewhat subjective and does not capture the variation likely to exist in the volume of consumption.

Results from a cross-sectional study in the USA, in which 6245 adolescents were surveyed, indicate that parental supply is associated with a lower quantity of alcohol consumed per episode when the consumption is supervised (Foley et al., 2004). In another US study which surveyed 449 female high school seniors after graduation and again after their first semester of college, women who had been allowed to drink at home, whether during meals or with friends, reported more frequent heavy episodic drinking in their first semester of college, but those allowed to drink with friends drank more heavily on each drinking occasion (Livingston et al., 2010). While Van Der Vorst et al. (2010) reported that no differential effect of drinking at home versus drinking outside the home on later problem drinking, they did find that drinking at home was cross-sectionally associated with lower weekly volumes of alcohol than drinking outside the
home. Also, in the Australian School Students Alcohol and Drug Survey, students who reported drinking alcohol supplied by their parents, and drinking at home, drank less than those who sourced alcohol from friends or elsewhere and drank outside the home (White and Smith, 2009).

Our recent work also suggests that there are important differences between parental supply for drinking under parental supervision, versus that for drinking under the supervision of another adult or with no supervision. With data from a cross-sectional survey of 530 students in seven high schools in New South Wales, Australia, after controlling for school year and gender, and adjusting for clustering, parental supply for drinking under non-parental supervision and with no supervision, as well as the number of close friends believed to have consumed alcohol in the past month, and indigenous status, were each independently associated with risky drinking. Parental supply per se was not associated with an increased odds of risky drinking. These results suggest that the impact of parental supply may vary according to the circumstances of supervision under which alcohol is supplied (Gilligan et al., 2011).

Along with the outcomes measured, the nature of supply of alcohol and level of supervision of drinking differs markedly in interpretation and application across studies. Caution should be taken in the interpretation and comparison of results from these studies, whose outcomes of interest range from problem drinking and alcohol-related harms to the frequency and volume of alcohol consumed. Even in longitudinal studies, the failure to explore interactions between variables over time (cross-lagged pathways) may limit the interpretability of results. The limited information is provided in most studies about who is present during drinking occasions, and thus the potential influence of parents, other family members and peers in different circumstances. The literature to date presents inconsistent information about the impact of parental supply of alcohol, age of initiation and patterns of use.

Contrary to medical guidelines, many parents view the provision of small amounts of alcohol to their adolescent children as a mechanism to influence what and how much their children drink (Kypri et al., 2007). Further work is required to better understand the relationship between the circumstances of supply (e.g. supervised drinking with a family meal versus drinking with friends in the backyard while parents are in the house) and the volume and type of alcohol provided (e.g. a sip or small glass of wine with a meal versus a bottle of wine or spirits to share with friends). The long-term impacts of these different contexts of supply are yet to be explored.

This complex issue of parental supply of alcohol represents a challenge for parents and appears to offer a logical target for intervention. Parental provision of alcohol is related to parental rule setting, availability of alcohol, and parental monitoring, and may provide an opportunity to enhance communication, all of which were key factors identified in the review by Ryan et al. (2010). It is expected that parental behaviours regarding supply of alcohol and the introduction of their children to alcohol are influenced to a large degree by social norms and the perceptions of others’ behaviour. Australian parents were previously guided by a policy recommending a gradual supervised introduction to alcohol (NHMRC, 2001) and suggestions that alcohol use is a normal part of adolescent development (Beyers et al., 2005). Such advice may have helped to create an environment in which it is difficult for parents to resist their children’s requests for alcohol.

THE ROLE OF PARENTAL SOCIAL NETWORKS IN SUPPLY OF ALCOHOL

Parental decisions about introducing their children to alcohol and their attitudes towards alcohol consumption are fundamentally social phenomena but they have not previously been studied as such. Just as the drinking behaviour of adolescents appears to be associated with perceptions of their peers’ drinking (Carter et al., 2007), it is likely that parental behaviours are influenced by their understanding of the behaviours of other parents. Social pressure associated with misperceived norms regarding what other parents do (behavioural norms) and their attitudes on what is acceptable (injunctive norms) may be modifiable. Such normative beliefs may be determinants of parental permission regarding attendance at events, adolescent drinking, supply of alcohol and the imposition of restrictions. Misperceived injunctive norms among parents refer to the belief that one’s peers are more liberally minded or more restrictive than they really are. The perceptions that parents have about other parents’ behaviour are probably informed by what they are told by their children, and are likely to be inaccurate. Parents’ understanding of the behaviours of others may be described as a form of pluralistic ignorance—a social phenomenon in which individuals share a false belief about the attitudes or behaviours of other group members (O’Gorman, 1986). Correcting the misperceptions that parents have regarding the degree of other parents’ permissiveness may lead to a re-evaluation of behaviour or adoption of more effective rules in relation to alcohol.

Analysis and exploration of social networks has been used extensively in social research in relation to the spread of information, the impact of social media (Gibbons et al., 2010) and the spread of disease and behaviours such as smoking cessation (Christakis and Fowler, 2008). While strong social networks and cliques exist among adolescents (Witvliet et al., 2010), the parents of the individuals in each social group are less strongly associated and often do not know each other. It has been demonstrated in studies of smoking cessation (Christakis and Fowler, 2008) and other behaviour change that even unrelated individuals are able to influence the behaviour of each other through their common social links. The behaviour of the parents of a group of teenagers may be a classic example of such influence, with the parents of child A being influenced to behave in a certain way based on what their child (A) tells them that parents of children B and C are doing. In this way, a proximal network of children may be able to influence an entire more distal network of parents by feeding inaccurate information into that network. If the parents in the distal network can be connected, information is likely to travel directly between them and maintain its integrity. It may also be argued that information could be given to individual parents without the need to connect them, but such an approach is unlikely to be sustainable.

An exploration of the knowledge and attitudes of parents in rural Australia regarding their adolescents’ drinking
reported that parents see an advantage in situations where the parents of their children’s friends have similar values and beliefs to them. Parents found that setting and enforcing rules, and monitoring alcohol use were easier in such situations (Graham et al., 2006). There is evidence to suggest that parents would welcome advice and assistance about how to enforce rules and promote safe behaviours (Srebnik et al., 2002) and that they feel somewhat powerless to do anything about adolescent alcohol consumption (Stronach, 2003).

Establishing networks with other parents is a suggestion made to parents in guidelines designed to help manage adolescent alcohol use (Orygen Youth Health Research Centre, 2010), but it is not made clear how parents should go about this. After their children reach a certain age, parents may be reluctant to intervene in their social life, and to make contact with other parents to discuss concerns or circumstances surrounding social events. Anecdotal evidence from parents suggests that they are reluctant to behave in a way that might embarrass their child and lead to them not fitting in with social groups (Graham et al., 2006).

**THE POTENTIAL TO INTERVENE WITH PARENTS**

Low recruitment rates and high rates of attrition have plagued many efforts to address adolescent alcohol consumption through parents and families, with some reports of parents who drop-out being more likely to have lenient attitudes towards youth alcohol consumption than those who continue in an intervention programme (Koutakis et al., 2008). Acceptability is a requisite feature of public health interventions that require the active cooperation of participants. Some parents may welcome guidance on how to deal with the difficulties of raising adolescent children, but strategies that encourage parents to change behaviour may meet resistance. High attrition rates in various programmes are likely to reflect, to some extent low acceptability of the programmes to the parents involved. Haggerty et al. (2006) explored parental engagement with two different formats of the ‘Parents Who Care’ programme and reported a higher frequency of programme initiation among parents allocated to the self-administered format which was implemented by families in their own homes, on their own schedules. Lower age of initiation was reported for the group allocated to attend evening meetings in local schools.

The parental programmes trialled to date are largely high-intensity interventions requiring active and sustained involvement of individual parents. Perhaps, a more acceptable and potentially cost-effective approach to intervening with parents would be to implement less intensive interventions, potentially cost-effective approach to intervening with the involvement of individual parents. Perhaps, a more acceptable and potentially cost-effective approach to intervening with parents would be to implement less intensive interventions, which utilize parents’ existing resources. Web-based approaches offer an alternative, whereby parents can engage with guidance and educational materials in a safe environment in their own time. Thorough evaluations of the effectiveness and acceptability of web-based programmes have not been conducted. Several examples can be found for parents in Australia (http://www.parentingstrategies.net/modules/), and the USA (http://www.byparents-forparents.com/resources.html, http://www.madd.org/underage-drinking/the-power-of-parents/, http://www.outsidetheclassroom.com/solutions/higher-education/alcoholedu-for-parents.aspx).

**FUTURE DIRECTIONS**

This review has identified a number of knowledge gaps that if filled, would provide a more complete understanding of the role of parents in adolescent drinking and the most appropriate approaches for intervention. A research agenda designed to further explore these issues and ultimately address or reduce heavy episodic drinking among adolescents via their parents may include investigation of the following.

**The volume and contexts of parental supply of alcohol**

Some studies suggest that parental supply of alcohol for consumption without parental or adult supervision is riskier than supply for drinking under parental supervision (Livingston et al., 2010; Gilligan et al., 2011). Large-scale cohort studies suggest that the volume of alcohol supplied by parents is smaller than that sourced elsewhere (White and Smith, 2009; Dietze and Livingston, 2010). This requires further exploration, including quantification of the volumes of alcohol given to children as well as the circumstances of supervision. Previous studies have been limited by a failure to explore parental and child perceptions of supervision in detail (Kypri et al., 2007). For example, are parents sitting at a dinner table while their children drink, or are they inside the house while their children drink in the backyard?

**The structure of social networks among adolescents and their parents**

Mapping social networks would enable an understanding of the relationship between the social networks that exist among adolescents and those that exist among their parents. Studies can be constructed to explore the strength of connectivity and the nature of connections between parents (Granovetter, 1973). It is hypothesized that while adolescents are connected by multiple, strong connections, their parents are more tenuously connected with other parents and fewer connections are likely to exist between them. By mapping these structures and exploring the culture of parental connections, it would be possible to explore the possibility of intervening through the creation, strengthening or modification of parent networks.

**The accuracy of parents’ perceptions of other parents’ behaviours and beliefs**

It is hypothesized that pluralistic ignorance exists among parents about the degree to which others permit their adolescents to drink or supply them with alcohol. If pluralistic ignorance is confirmed, the acceptability of a norm correction programme should be assessed. Exploratory work would be needed to investigate the appropriateness of intervening with parents in this manner. It is possible that by linking parents together and providing them with accurate information about social norms and the behaviours of their adolescent children, pluralistic ignorance may be reduced. While pluralistic ignorance itself could be addressed temporarily with a single public announcement or provision of information, the creation of social networks may lead to a more sustainable change in the behaviours of parents at a community level. Such a concept is consistent with the recommendation made...
by Schor, that parents need support to carry out their parenting roles (Schor, 1996), and is likely to be more acceptable for parents than an individual approach. Such an approach would not rely on much active involvement of parents, but could continue to function with relatively passive involvement, simply through the dissemination of information, thus potentially overcoming the issues of low recruitment and high attrition that have plagued previous intervention efforts.

**An analytic approach for quantifying aspects of parental networks**

Accurately characterizing norms among a population requires the recruitment of representative population samples. If the norms of interest exist in small subgroups (e.g. social networks within parents of children at particular schools) then the examination of norms in several small subgroups may be appropriate (Opsahl and Panzarasa, 2009). Identifying these networks, exploring the behaviours and attitudes that exist within them and establishing appropriate access points in order to disseminate information about the norms, would be the first steps to designing interventions in this area.

**Low-intensity parental interventions including web-based programmes**

Web-based interventions have shown promising results in various areas of healthcare and public health, including interventions for problem drinking (Kyprī et al., 2009), tailored feedback interventions for smoking (Civljak et al., 2010), diet change (Poddar et al., 2010) and decisional-support systems (Krist et al., 2007). With advancing technology and the widespread use of social media, web-based interventions represent an opportunity for interventions in which parents can participate in a safe environment at times and levels that suit their needs. It is also possible that web-based approaches could be used to bring together parents from diverse backgrounds and with diverse views about adolescent drinking. The acceptability, uptake and effectiveness of web-based interventions in changing parent behaviour and impacting upon adolescent behaviours requires study. For an intervention targeting parental social networks, a cluster randomized controlled trial would require a large number of parental networks to be recruited as the focus of intervention, and the effect upon drinking behaviours among the adolescent children of the network members would be estimated (Rothman et al., 2008).

**CONCLUSION**

Parental supply of alcohol and parental monitoring have been linked to initiation to drinking as well as levels of later use and are likely to be influenced by the behaviours of other parents and their perceptions of social norms. Sufficient evidence already exists to indicate that intervening with parents, and possibly via parental social networks may be effective in reducing adolescent risky drinking. Future research directions have been suggested, which include the exploration of the volume and contexts of parental alcohol supply, the structure of parent and adolescent social networks and the existence of pluralistic ignorance. The findings of such research could inform the design and evaluation of interventions.

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