

## EXPLORING ATTITUDE AND BELIEF CORRELATES OF ADHERING TO THE NEW GUIDELINES FOR LOW-RISK SINGLE-OCCASION DRINKING: AN APPLICATION OF THE THEORY OF PLANNED BEHAVIOUR

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**Abstract** — The present study explores the correlates of adhering to the recent low-risk single-occasion drinking (LRSOD) guidelines. This was achieved by exploring key beliefs and attitudes underlying adherence to these guidelines within the framework of the theory of planned behaviour (TPB). Female students ( $n = 173$ ) provided information about their LRSOD and beliefs and attitudes pertaining to LRSOD. Analyses of the resultant data showed the TPB to be significantly predictive of LRSOD, accounting for 27% of the variance, with normative beliefs, behavioural beliefs, and attitude emerging as significant predictors in the regression analysis. The implications of the study findings are discussed in terms of the current utility of the LRSOD limits for reducing alcohol-related harm.

### INTRODUCTION

The prevalence of risky single-occasion drinking (RSOD) is high (Kellner *et al.*, 1996; Quigley and Marlatt, 1996) and has risen over the years (Health Education Authority (HEA), 1995*b*; Parker, 1995). RSOD appears to be most common amongst young people, especially amongst students, of whom 62.2% report consuming five or more drinks in one sitting in the previous 2 weeks (Delk and Meilman, 1996). Moreover, 68% of all the alcohol that students report drinking is consumed by risky single-occasion drinkers, who also account for the majority of alcohol-related problems amongst students (Wechsler *et al.*, 1999). The consequences of RSOD are substantive in kind. Whilst the long-term health consequences of excess drinking are serious, such as cirrhosis of the liver and other alcohol-related illnesses (Anderson *et al.*, 1993), so too are the more immediate behavioural consequences, such as road accidents (Midanik *et al.*, 1996) and unprotected sex (Morgan *et al.*, 1990; McEwan *et al.*, 1992). RSOD is considered the most common type of hazardous alcohol consumption amongst young people (Kellner *et al.*, 1996; Quigley and Marlatt, 1996).

Despite the adverse consequences of RSOD, studies show that generally it is not perceived as carrying risk, with adverse consequences being acceptable to many drinkers. For example, in one UK study, a survey of alcohol use among college students in Scotland, it was found that both students (of whom 62.2% reported consuming five or more drinks in a sitting in the previous 2 weeks) and course administrators reported that they did not consider alcohol use by college students to be a problem (Delk and Meilman, 1996). In terms of health education recommendations, the low perceived risk of RSOD among young people indicates a need for greater awareness of its dangers.

Until recently, communicating the dangers of RSOD have been neglected in favour of promoting weekly limits (HEA, 1995*a*). However, recent public education campaigns pointed out the dangers of this type of drinking and encouraged people

to remain within the low risk single-occasion drinking limits (LRSOD) (HEA, 1996). UK governmental policies now define LRSOD as the consumption of 3 U of alcohol or less a day for men and 2 U for women. Increased risk from single-occasion drinking is defined as following from the consumption of 4 U of alcohol or more a day for males and 3 U of alcohol or more a day for women [British Medical Association (BMA), 1995; HEA, 1996]. This recent approach by health promotion professionals in the UK has been welcomed by many researchers in the alcohol and addiction field (Anderson, 1996) and is consistent with safe daily limits recommended by other governmental bodies, such as those of Australia and New Zealand (HEA, 1995*a*). The new guidelines ensue from evidence showing that exceeding the LRSOD limits is associated with a number of negative short-term behavioural consequences (HEA, 1996). Moreover, the evidence suggests that harm may be associated with single-occasion drinking at lower levels than previously thought problematic. Midanik *et al.* (1996), for example, found that there is a considerably increased risk of drink-driving accidents with the consumption of just one drink a day (where drinking and driving is defined as driving after 1 drink). Further, there is an increased awareness that, in order to reduce levels of harm in the general population, the alcohol consumption of many needs to be modified. Although heavy consumers of alcohol contribute disproportionately to the incidence of alcohol-related problems, it is the much larger segment of the population which drinks moderately that contributes to the greater proportion of alcohol-related harm. Accordingly, intervention strategies aimed at reducing alcohol consumption now are targeted at the broad spectrum of drinkers, including lower risk or moderate drinkers (BMA, 1995; HEA, 1995*a*).

The provision of the new guidelines for LRSOD may prove to be an important step towards a reduction in alcohol-related harm (the latter referring to both negative physical after-effects, such as involvement in driving accidents, contracting disease from engaging in unprotected sex, and problems of a social nature within interpersonal, occupational, and financial domains). New set limits will be useful in helping individuals to monitor their drinking, particularly given the low perceived harm of LRSOD among young drinkers. Assurance is needed,

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however, as to the effects of these new limits on alcohol consumption. These new set limits are derived from empirical evidence showing a rise in alcohol-related harm when the set safer limits for single-occasion drinking are exceeded, rather than from drinkers' acceptance of these limits. As recommended by Murgraff *et al.* (1999), there is an urgent need to explore attitudinal and belief correlates of the reported frequency of such drinking, so as to examine what best predicts adherence to the guidelines. The present study, therefore, aims to provide preliminary evidence regarding the correlates of alcohol consumption in excess of these new set limits.

One theoretical framework which may be employed to identify the key beliefs and attitudes associated with adherence to the new guidelines for LRSOD is the theory of planned behaviour (TPB; Ajzen, 1991). The TPB is a widely used social psychological model of the relationships between attitudes and behaviour, which has been applied to a range of health behaviours. Briefly, the theory outlines how the influences upon an individual determine that individual's decision to follow a particular health behaviour. The TPB outlines three main influences on a person's behaviour: his/her evaluation of the behaviour (i.e. 'attitude'); his/her perception of the social pressure to engage in the behaviour (i.e. 'subjective norm'); and his/her perception of control over being able to perform the behaviour (i.e. 'perceived behavioural control'). Underlying each of these three components of the model are specific beliefs focusing on: (a) the consequences of performing the behaviour (i.e. 'behavioural beliefs'); (b) the perceived wishes of important referents (i.e. 'normative beliefs'); and the factors which may inhibit or facilitate the performance of the behaviour (i.e. 'control beliefs'). So, according to the TPB, individuals are likely to enact a particular health behaviour if they believe that it will lead to an outcome which they value, if they believe that people (whose views they take into consideration) think they should carry out the behaviour, and if they feel that they have the necessary resources and opportunities to perform the health behaviour. The theory has been found to account successfully for the enactment of health behaviours generally (Ajzen, 1991; Madden *et al.*, 1992) and alcohol consumption specifically (Norman *et al.*, 1998). Further, Conner and Armitage (1998) conducted a meta-analysis of the TPB in which it was found to account for 48% of the variance in behavioural intentions and 23% of the variance in health behaviour. These latter authors concluded that the TPB is useful for studying a very wide range of behaviours and in the prediction of intentions. These findings were consistent also with Godin and Kok's (1996) review of the relevant literature. More importantly, two studies have been published to date reporting the application of TPB to drinking behaviour, both demonstrating support for the utility of TPB for understanding its social and psychological antecedents (Schlegel *et al.*, 1992; Norman *et al.*, 1998). Norman *et al.* (1998), for example, found that TPB accounted for 38% of the variance in frequency of binge drinking (defined as half the recommended weekly consumption of alcohol in a single session, i.e. 7 U of alcohol for women and 10.5 U for men). This suggests the TPB's potential utility for identifying the key beliefs underlying binge drinking. To date however, the theory has not been used to examine adherence to the new set guidelines for LRSOD. This study, therefore, is a preliminary empirical investigation of the psychological correlates of the frequency

of alcohol consumption in excess of the new set limits for LRSOD, using the TPB as a theoretical framework.

Studying the beliefs and attitudes of women which underly adherence to the new guidelines is highly relevant to examining LRSOD. In recent years, research showed that young women's drinking is on the increase (Parker and Harford, 1992; Harvard School of Public Health, 1995). Today, while women are still less often excessive drinkers than men, the gap has closed, and the risks for women are even more pronounced (Harvard School of Public Health, 1995). Moreover, research has found sex differences in the relationship between the number of drinks per occasion and alcohol-related problems, with women reporting more problems as a result of alcohol consumption per drinking session than men (Wechsler *et al.*, 1995). It is argued, therefore, that particular effort should be made to assess amongst women the psychological correlates of the reported frequency of alcohol consumption in excess of the new LRSOD limits (i.e. consuming no more than 2 U of alcohol/drinking session). Thus, the study reported here seeks to examine correlates of adhering to the new guidelines amongst females, using the TPB as a theoretical framework. Specifically, explored here are possible associations between the reported frequency of exceeding LRSOD limits and attitudes, subjective norms, perceived behavioural control beliefs, behavioural beliefs, normative beliefs, and control beliefs.

## METHODS

### *Respondents and procedure*

A sample of 235 female psychology undergraduate students were recruited to the study during lectures. All were given the opportunity to refuse to participate, though none did so. Of the 235 respondents, 173 reported that they exceed the LRSOD limits at least occasionally and their data are presented here. Their mean age was 28.30 years with a range of 18–54 years. Of the 173 respondents, 124 (71.7%) were single, 28 (16.2%) were married, and 21 (12.1%) were separated or divorced.

At recruitment, respondents received the questionnaire for immediate completion. The questionnaire was filled in anonymously. Respondents completed the study questionnaire, providing demographic data and data about current single-occasion drinking. The latter were preceded by an explanation of what is meant by 2 U of alcohol. Then respondents were presented with questions regarding the TPB items.

### *Questionnaire measures*

The questionnaire booklet issued to participants in this study comprised two parts.

(1) *Current alcohol consumption.* For the purposes of asking about previous occasions of exceeding the LRSOD limits, respondents were informed that one pint of beer or two small glasses of wine or spirit represent 2 U of alcohol (UK). Current single occasion drinking was measured by the item: 'how often do you consume more than 2 U of alcohol on a single drinking session?', possible responses being 'every day', '5 or 6 times a week', '3 or 4 times a week', 'twice a week', 'once a week', 'once in 2 weeks', 'once in 3–4 weeks', 'less than once a month' and 'never'. Any respondent who selected the 'never' response option was excluded from the analysis.

(2) *Items for measuring the TPB constructs.* These were developed in accordance with Ajzen and Fishbein's (1980) recommendations. To date, there are no published papers available which explore the application of the TPB to the new guidelines for LRSOD. In order to generate items, therefore, a pilot study was conducted to develop appropriate operational definitions of TPB constructs as pertaining to LRSOD. Items were selected following interviews with 20 self-identified female single-occasion drinkers who at least occasionally exceeded the LRSOD limits. A large number of items were selected to represent a broad range of beliefs expressed by these drinkers. For generating behavioural belief items relating to consuming no more than 2 U of alcohol/drinking session, drinkers were asked to consider and express their beliefs regarding desirable and undesirable outcomes of this behaviour. For generating normative belief items relating to LRSOD, drinkers were asked to select referent groups which influence their LRSOD consumption. For generating control belief items relating to LRSOD, drinkers were asked to consider external factors which may facilitate or inhibit their LRSOD.

Accordingly, items were designed to measure each of the cognitions specified by the TPB. The questionnaire included the following measures to assess the central components of the TPB. All responses were made on a seven-point scale.

*Attitude towards LRSOD:* This measure was taken as the sum of six semantic differential scales: 'For you personally, drinking no more than 2 U of alcohol in a session would be ...' (pleasant-unpleasant, satisfactory-unsatisfactory, sufficient-not sufficient, enjoyable-unenjoyable, enough-not enough, safe-unsafe).

*Subjective norm:* This was measured using four items. For example: 'People who are important to me would approve of me drinking no more than 2 U of alcohol in a session' (strongly agree-strongly disagree). The four items subsequently were summed in order to form a single measure of subjective norm.

*Perceived behavioural control:* This was measured using five items. For example: 'Whether or not I drink no more than 2U/session is largely controlled by myself' (strongly disagree-strongly agree). The five items subsequently were summed in order to form a single measure of perceived behavioural control.

*Behavioural beliefs:* Behavioural beliefs were measured by asking respondents to indicate their agreement with nine potential outcomes. These were: 'drinking 2 U of alcohol or less in a session ...' (a) '... would make me feel more confident'; (b) '... would make me feel more relaxed'; (c) '... would make me feel less inhibited'; (d) '... means that I can drive home at the end of an evening'; (e) '... would allow me to experience the positive health benefits attributed to consuming small amounts of alcohol'; (f) '... would not be enough for me to really enjoy myself'; and 'drinking no more than 2 U of alcohol/session ...' (g) '... would not satisfy me'; (h) '... would not be enough for me to take as much pleasure as I can from the alcohol'; (i) '... would mean that there are no significant risks to my health which may be experienced as a result of heavy drinking'. The response scale for this measure was a seven-point scale with end points given as strongly disagree-strongly agree. Each of these nine belief items was followed by an evaluation of the outcome, the response scale for this measure comprising seven options with end points given as good-bad. For example, 'feeling more

confident would be good/bad'. To calculate this subscale score, each behavioural belief was multiplied by the corresponding outcome evaluation, and these products were summed.

*Normative beliefs:* Five normative beliefs were assessed by asking respondents to indicate the extent to which specified referents would approve or disapprove of them consuming no more than 2 U/drinking occasion. For example, 'my partner would want me to drink no more than 2 U of alcohol in a session'. (The specified referents were: friends, partners, parents, government health campaigns, and public education). Corresponding to each normative belief was a motivation to comply with these referents. This was assessed by statements worded, for example, in the following form: 'with regard to my drinking, I want to drink what my partner would want me to drink' (strongly disagree-strongly agree). Each normative belief score was multiplied by the corresponding motivation-to-comply score, and the products were summed.

*Control beliefs:* Control beliefs were measured by asking respondents to indicate the extent to which certain factors would facilitate or inhibit the consumption of no more than 2 U/session. Four items were used to assess this variable. These were: (a) 'experiencing high levels of stress would make me more likely to consume more than 2 U of alcohol in a session'; (b) 'frequent visits to the pub would make me more likely to consume more than 2 U of alcohol in a session'; (c) 'having to wake up early in the morning would make me more likely to limit my consumption to no more than 2 U of alcohol/in a session'; (d) 'driving home at the end of an evening would make me more likely to limit my consumption to no more than 2 U of alcohol/in a session'. The response scale for this measure was a seven-point scale with end points of strongly disagree-strongly agree. Respondents were asked also about the frequency of occurrence of these factors, the response scale for this measure comprising seven options with end points given as frequently-never, for example, 'I celebrate events ... frequently/never'. Each control belief item score was multiplied by the corresponding frequency of occurrence item score and these products were summed to produce one control belief measure.

Cronbach's (1951)  $\alpha$ -coefficients, scale means, and standard deviations as computed for the 173 respondents are summarized in Table 1.

Table 1. Cognitive measures, Cronbach's  $\alpha$ , means and standard deviations in relation to low-risk single occasion drinking (LRSOD)

Measure <sup>a</sup>	No. of items	$\alpha$	Mean <sup>b</sup>	SD
Current drinking	1	—	4.32	1.69
Attitude	6	0.87	5.06	7.80
Perceived behavioural control	5	0.65	5.53	5.75
Subjective norm	4	0.78	3.42	6.51
Behavioural beliefs	9	0.69	3.91	10.31
Control beliefs	4	0.70	4.87	5.88
Normative beliefs	5	0.80	4.49	7.44

<sup>a</sup>All variables were scored consistently so that higher scores reflect lower frequency of exceeding the LRSOD limits, more positive attitude towards LRSOD, higher perceived behavioural control to drink within the LRSOD limits, more positive subjective norm to drink within the LRSOD limits etc.

<sup>b</sup>The combined means for each scale divided by the number of items for each scale is reported.

## RESULTS

*Descriptive findings*

Table 1 shows that, on average, respondents engaged in exceeding the LRSOD limits between 'once a week' and 'twice a week'. Mean scores indicate that a majority of respondents had a positive attitude towards limiting their consumption to no more than 2 U/session and felt that they were capable of limiting their single-session consumption to this amount. Respondents 'slightly disagreed' that they felt under pressure to consume more than 2 U/session and were uncertain as to the behavioural consequences of consuming no more than this. They 'slightly agreed' that factors which facilitate the consumption of more than 2 U/session would enhance the likelihood of them engaging in this behaviour and that their significant others would approve of them consuming no more than 2 U/session.

*Correlations between variables*

Nine variables were measured in the study. Bivariate correlations between the nine variables ranged from 0.01 to 0.61 (see Table 2). The strongest significant bivariate correlations between TPB variables and LRSOD were found between perceived behavioural control and LRSOD followed by attitude and normative beliefs, behavioural beliefs, and subjective norm.

*Predictors of current single-occasion drinking behaviour*

A hierarchical multiple regression analysis was used to predict current single-occasion drinking. The independent variables were entered in two blocks: (a) the direct TPB

measures, i.e. perceived behavioural control, attitude, and subjective norm; and (b) the indirect TPB measures, i.e. behavioural beliefs, normative beliefs, and control beliefs. Perceived behaviour control, attitude, and subjective norm were found to predict 17% of the variance in single-occasion drinking [ $F(3,169) 13.02, P < 0.0001$ ], with perceived behavioural control and attitude emerging as significant predictors. The addition of behavioural belief, control beliefs, and normative beliefs at step 2 improved the prediction of single-occasion drinking behaviour significantly. [ $R^2$  change = 0.105,  $F(6,166) 11.50, F$  change = 8.29,  $P < 0.0001$ .] Altogether, 27% of the variability in current single-occasion drinking behaviour was predicted by these six independent variables, attitude, behavioural beliefs, and normative beliefs emerged as significant predictors. In descending order of magnitude of effect, normative beliefs, behavioural beliefs and attitude contributed significantly and independently to the prediction of current single-occasion drinking behaviour ( $Sr^2 = 0.08, Sr^2 = 0.05,$  and  $Sr^2 = 0.03$  respectively). Table 3 displays the unstandardized regression coefficients, the standardized regression coefficients, the squared semi-partial correlations (which provide an estimate of the variance uniquely attributable to each variable) and adjusted  $R^2$ . Table 3 also displays confidence intervals for the unstandardized regression coefficients.

## DISCUSSION

The study reported here provides a preliminary examination of the psychological correlates of adherence to the recent

Table 2. Zero-order correlations between the theory of planned behaviour cognitions, current single-occasion drinking, and demographics

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Current drinking	1.00	0.26**	0.38**	0.18*	-0.25**	0.26**	-0.01	-0.07	-0.19*
(2) Attitude		1.00	0.27**	-0.22*	-0.42**	-0.27**	0.34**	0.21*	0.08
(3) Perceived behavioural control			1.00	0.39**	-0.24**	0.32**	-0.22*	-0.19*	-0.15
(4) Subjective norm				1.00	0.28**	0.61**	-0.36**	-0.31**	0.14
(5) Behavioural beliefs					1.00	0.42**	-0.39**	-0.05	-0.06
(6) Normative beliefs						1.00	-0.50**	-0.16	-0.14
(7) Control beliefs							1.00	-0.04	0.05
(8) Age								1.00	0.41**
(9) Marital status									1.00

\* $P < 0.01$ ; \*\* $P < 0.001$ .

Table 3. Predicting current single-occasion drinking: hierarchical regression analysis

IV	B	SE B	$\beta$	SP	95% confidence interval for B	
Step 1						
Perceived behavioural control	0.08**	0.02	0.28	0.05	0.03	0.13
Attitude	0.04*	0.01	0.21	0.04	0.01	0.08
Subjective norm	0.03	0.02	0.12	0.01	-0.01	0.07
Step 2						
Perceived behavioural control	0.03	0.02	0.11	0.00	-0.02	0.09
Attitude	0.04*	0.02	0.20	0.03	0.01	0.08
Subjective norm	0.01	0.02	0.04	0.00	-0.03	0.05
Control beliefs	0.00	0.00	0.04	0.00	-0.01	0.01
Behavioural beliefs	-0.01**	0.00	-0.31	0.05	-0.01	-0.00
Normative beliefs	0.01***	0.00	0.41	0.08	0.01	0.02

IV, TPB variables; B, unstandardized regression coefficients;  $\beta$ , standardized regression coefficients; SP, squared semi-partial correlations.

Note:  $AR^2 = 0.17$  for step 1 ( $P < 0.0001$ );  $AR^2 = 0.27$  for step 2 ( $P < 0.0001$ ).

\*\*\* $P < 0.0001$ ; \*\* $P < 0.001$ ; \* $P < 0.01$ .

LRSOD guidelines using the TPB as a theoretical framework. The TPB was found to account for a moderate amount of the variance in LRSOD behaviour, with normative beliefs, behavioural beliefs, and attitude being significant predictors.

Drinking above the LRSOD limits was found to be a common activity, with 73.6% of the sample doing so at least occasionally. Moreover, 53% of the sample engaged in this type of drinking at least twice a week. This figure is higher than the one reported for either binge drinking (defined as drinking half the recommended weekly consumption of alcohol in a single drinking session) or higher risk single-occasion drinking (defined as the consumption of 6 U of alcohol on a single drinking occasion). It is indicative of the large number of drinkers who drink at moderate levels of consumption (between 2 U and 6 U). For example, Murgraff *et al.* (1998) reported that 48% of their respondents engaged in higher risk single-occasion drinking at least once in 2 weeks, and Norman *et al.* (1998) reported that 46.3% of their sample engaged in binge drinking at least once a week. Coupled with the low perceived risk of single-occasion drinking (HEA, 1995b), this suggests that interventions aimed at reducing alcohol-related harm should raise awareness of the risks associated with exceeding the LRSOD limits.

Support was found for the effects of normative beliefs on reported frequency of exceeding the LRSOD limits. Stronger beliefs that significant referents would wish respondents to remain within the LRSOD limits were associated with lower frequency of exceeding them. This shows that a reduction in alcohol misuse would depend on a change in social norms. This can be achieved in a number of ways. Research has shown that prevention programmes that use norm changing strategies, ranging from campus-wide information campaigns to providing personalized feedback and advice, have produced encouraging results (Wechsler *et al.*, 1999). Correction of erroneous beliefs about the prevalence of alcohol use (Hansen, 1993; Haines and Spear, 1996) and modelling appropriate social norms (Donaldson *et al.*, 1996; Bennett and Murphy, 1997) are alternative ways of challenging social norms, which have been found to be negatively correlated with alcohol consumption. Challenging existing social norms, however, is not the only way to change these norms. A change in social norms can also occur through mass media education campaigns, the use of warning labels and restrictions on commercial advertising of alcohol (Aitkin and Block, 1984; Bennett *et al.*, 1991; Hilton, 1992).

Support was found also for the effects of behavioural beliefs on reported frequency of exceeding the LRSOD limits. Higher levels of behavioural beliefs that drinking within LRSOD limits will lead to outcomes such as making one feel more confident, relaxed, and less inhibited are associated with a higher frequency of exceeding these limits. The latter is perhaps surprising, as it could be expected that stronger beliefs that LRSOD is associated with positive outcomes would lead to fewer incidents of exceeding the LRSOD limits (as remaining within the LRSOD would be sufficient for enjoying the benefits of drinking). Possibly, respondents who associate positive outcomes with LRSOD do so even more for excessive drinking and thereby engage in risky drinking, whereas respondents who do not associate positive beliefs with LRSOD do not equate positive outcomes with drinking at any level and therefore tend to remain light or infrequent drinkers. The significant

association between positive behavioural beliefs relating to LRSOD and excessive drinking found in the present study is congruent with the research on the role of behavioural beliefs in binge drinking (HEA, 1995b). The latter indicates that drinkers attribute similar benefits from moderate through to heavy levels of drinking. This is noteworthy, because it shows that the perceived benefits of alcohol consumption at low-risk levels do not differ largely from those at higher risk levels. A greater awareness of the similarity in the benefits attributable to different patterns of drinking combined with a focus on the risks associated with exceeding LRSOD limits, then, may result in a shift towards low-risk levels of drinking. Thus, health educators need to convey the message that LRSOD limits are sufficient to enjoy the benefits of drinking without taking the risks that exceeding LRSOD carry.

Support was found also for the effects of attitudes towards drinking within LRSOD limits on exceeding such limits: a more negative attitude towards drinking within LRSOD limits is associated with a higher frequency of exceeding those limits. This suggests that alcohol-related interventions should seek to change attitudes in favour of remaining within the LRSOD limits. One way of achieving this is by challenging behavioural beliefs which help exceed the LRSOD limits (for example that exceeding LRSOD limits would lead to greater pleasure than remaining within them). This is a difficult task, as some behavioural beliefs, especially those based on experience rather than on lack of information, would be harder to change than others. The aim, however, would be to encourage low-risk levels of consumption in a population which already, at least occasionally, drinks above these levels and which therefore holds established beliefs about exceeding the LRSOD limits. Specific messages, then, need to be matched to already existing beliefs amongst vulnerable groups. For example, the significant correlation between age and attitude, which indicates that younger respondents have a more negative attitude towards consuming no more than 2 U/session, illustrates that specific beliefs towards LRSOD in this group in particular would need to be challenged. An alternative to changing attitudes towards LRSOD limits is to change environmental factors so as to encourage people to remain within such parameters. A method referred to as 'server intervention' is one example of this. It involves training bar workers to identify customers who are drinking excessively and to develop skills to cope with them, including offering food or alternative drinks or discussing the adverse consequences that can result from drinking and driving. Reviews of such methods have been shown to be effective in reducing excessive alcohol consumption (Saltz, 1993).

Perceived behavioural control significantly and independently predicted drinking behaviour when the direct measures of TPB were entered. However, once the indirect measures of TPB were entered, its effects were no longer significant. An inspection of the correlations aids with the interpretation of this finding. The significant negative association between perceived behavioural control and behavioural beliefs indicated that people with higher perceived behavioural control have lower positive beliefs towards LRSOD. Behavioural beliefs, in turn, were found to be significant predictors of drinking behaviour. In terms of behavioural interventions, this suggests that enhancing perceived control alone will not be effective, unless it is coupled with persuasion concerning the positive

outcomes attributable to LRSOD. A positive perceived outcome may not always be sufficient for an adoption of a recommended action, nor can it guarantee continued maintenance of this behaviour (as indicated by the finding that positive outcomes were associated with excessive drinking). However, it is unlikely that individuals will adopt a recommended action without expecting positive outcomes.

To date, the recent single-occasion drinking guidelines have attracted little research. This study, then, sought to address this omission by exploring the TPB correlates of adhering to the new guidelines. The model was found to explain a moderate amount of the variance in LRSOD behaviour, though it should be noted that observed associations between attitudes and behaviour in a cross-sectional study, such as this, may not be entirely due to causal effects of one or the other. Prospective studies would need to be conducted in order to explore such a possible causal relationship. The utility of the recent LRSOD limits in relation to other aspects of drinking awaits testing. Assessing the effects of setting up these limits, for example, on subsequent consumption is one such avenue for further work to take. The present study provides the first step toward examining correlates of adherence to single-occasion limits. Clearly there is more work to be done, however, before we can argue confidently that these limits are effective in reducing alcohol-related harm.

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