

RADAR

Research Archive and Digital Asset Repository

OXFORD
BROOKES
UNIVERSITY

Davies, E, Martin, J and Foxcroft, D

Age differences in alcohol prototype perceptions and willingness to drink in UK adolescents

Davies, E, Martin, J and Foxcroft, D (2015) Age differences in alcohol prototype perceptions and willingness to drink in UK adolescents. *Psychology, Health and Medicine* , 21 (3). pp. 317-329.

doi: 10.1080/13548506.2015.1051556

This version is available: <https://radar.brookes.ac.uk/radar/items/d14f935e-2c49-4e79-b8d0-d212eff55268/1/>

Available on RADAR: July 2016

Copyright © and Moral Rights are retained by the author(s) and/ or other copyright owners. A copy can be downloaded for personal non-commercial research or study, without prior permission or charge. This item cannot be reproduced or quoted extensively from without first obtaining permission in writing from the copyright holder(s). The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the copyright holders.

This document is the postprint version of the journal article. Some differences between the published version and this version may remain and you are advised to consult the published version if you wish to cite from it.

Age differences in alcohol prototype perceptions and willingness to drink in UK adolescents

Authors: Emma L Davies¹, Jilly Martin², David R Foxcroft³

¹ Department of Psychology, Social Work and Public Health, Faculty of Health and Life Sciences, Oxford Brookes University, Headington Campus, Gypsy Lane, Oxford, OX3 0BP, United Kingdom, edavies@brookes.ac.uk 01865 484056

² Department of Psychology, University of Sheffield, Western Bank, Sheffield, S10 2TN, United Kingdom, jilly.martin@sheffield.ac.uk 0114 222 6513

³ Department of Psychology, Social Work and Public Health, Faculty of Health and Life Sciences, Oxford Brookes University, Jack Straw's Lane, Marston, Oxford, OX3 0FL, United Kingdom david.foxcroft@brookes.ac.uk 01865 485283

Corresponding author: Emma L Davies edavies@brookes.ac.uk

Acknowledgements

The authors are grateful to the participants who gave their time to take part in the project.

Funding

This work was supported by Alcohol Research UK [under grant number RS10/02]

Word count xxxxxx (not including abstract, tables or figures)

Age differences in alcohol prototype perceptions and willingness to drink in UK adolescents

Abstract

Using the Prototype Willingness Model (PWM) as a framework, this study sought to explore the relationship between prototype perceptions, willingness and alcohol consumption in a sample of adolescents in the United Kingdom. Adolescents aged 11-17 were asked about their alcohol prototype perceptions, willingness to drink, intentions, alcohol consumption, drunkenness and harms using a cross sectional online survey. Participants were recruited through opportunity sampling via schools and parents. The survey was completed by 178 respondents (51% female; 91 aged 11-15, 87 aged 16-17). Multivariate analysis revealed significant differences between participants aged 11-15 and 16-17 on PWM measures, even when experience with drinking was accounted for ($p < .001$). There were significant interactions ($p < .001$) between age and prototype perceptions; younger participants rated non-drinker prototypes as more favourable and more similar to the self than 16-17 year old participants. Willingness and intentions interacted with age; both measures were similar in 16-17 year olds, whereas younger participants scored significantly higher on willingness than intentions ($p < .001$). Three distinct scales of prototype descriptions were identified in principal components analysis. Characteristics related to sociability significantly predicted willingness to drink alcohol in the sample ($p < .001$). This study extends previous research by demonstrating that the PWM can provide a theoretical explanation of adolescent drinking in the UK. The results suggest that 11-15 year olds may be the most suitable age group for an intervention that targets alcohol prototypes, with a focus on characteristics related to sociability.

Age differences in alcohol prototype perceptions and willingness to drink in UK adolescents

Introduction

Adolescent alcohol misuse is associated with a number of harmful consequences (Alcohol Concern, 2011; Newbury-Birch et al., 2009). Interventions that aim to reduce risky drinking in adolescents are often based on theories that assume this behaviour can be changed by targeting attitudes and intentions. However, adolescence is characterised by high levels of impulsivity (Arnett, 2007; Powell, 2006) and drinking tends to occur in social situations where peer influences are strong (Gibbons, Gerrard, & Lane, 2003; Kelly et al., 2012).

The Prototype Willingness Model (PWM) (Gibbons & Gerrard, 1995) accounts for adolescent risk taking by suggesting two routes to behaviour. The first a rational, planned route via attitudes, norms and intentions, and the second a swifter, spontaneous route, operating outside of conscious control (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008). The spontaneous pathway acknowledges the social context and often unplanned nature of adolescent risk behaviour. It incorporates the typical images or 'prototypes' adolescents hold about people their age who behave in particular ways. Prototype perceptions determine an individual's 'willingness' to perform a behaviour; for example when non-drinker prototypes are favourable, then adolescents may be less willing to drink (Gerrard et al., 2002).

The PWM has been used as the basis for interventions which have shown promise in targeting risk behaviours, for example increasing condom use (Blanton et al., 2001) and reducing willingness to smoke (Andrews et al., 2011). Less research however, has explored the PWM in relation to adolescent drinking in the United Kingdom (UK), and no existing preventive interventions targeting this specific population have been identified. Indeed, within a recent meta-analysis of the PWM, only nine out of the 80 included studies were conducted in the UK (van Lettow, de Vries, Burdorf, & van Empelen, 2014), and only three with adolescents (average

age 16) (Rivis, Sheeran, & Armitage, 2006, 2010, 2011). Within Europe the UK is considered one of the higher alcohol consumption countries for adolescents (Hibell et al., 2012). Although the legal age for purchasing alcohol is 18, by the age of 16 most UK adolescents have tried alcohol, and many drink regularly (Hibell, et al., 2012; Newburn & Shiner, 2001).

Gibbons et al. (2000) argue that individuals who are intending to drink might be more accepting of the consequences (such as a hangover) whereas individuals who are willing, but not intending, to drink do not anticipate adverse outcomes. This lack of forethought means unplanned behaviour may be harmful to younger adolescents who may not consider themselves to be personally vulnerable (Gibbons, Gerrard, Ouellette, & Burzette, 1998). In a qualitative study with UK adolescents, it was found that there was a difference between older (aged 16-17) and younger (aged 11-13) participants whereby older participants made plans to drink (indicating their drinking was predominantly intentional), whereas, younger participants did not make plans to drink – indicating drinking was driven by a particular social situation (Davies, Martin, & Foxcroft, 2013). This suggests that targeting prototype perceptions could provide a suitable basis for an intervention aimed at younger adolescents with less experience of drinking.

Given the emphasis on prototype perceptions in the PWM, it is important to understand how they are described and evaluated in order to target them in interventions. Previous studies conducted in Germany and The Netherlands have examined the specific characteristics of prototypes. Zimmermann and Sieverding (2011) identified two underlying dimensions labelled 'sociability/ hedonism' and 'responsible', comprising characteristics from semantic differential scales. Another study asked young people aged 18-25 to describe five different prototypes (abstainer, moderate drinker, heavy drinker, tipsy, and drunk person) generating 23 descriptive words (Van Lettow, Vermunt, de Vries, Burdorf, & van Empele, 2012). These studies were important for determining intervention targets for students, however, apart from one small study (Davies, et al., 2013) we have not identified studies that have examined prototype descriptions with UK adolescents. This is important, as a recent systematic review concluded

that variation in intervention effectiveness could be due to differences in local setting and population group characteristics (Foxcroft & Tsertsvadze, 2012).

The overall purpose of the current study was to explore the application of PWM to UK adolescent alcohol consumption. The specific aims were 1) to describe the relationship between prototypes, willingness, intentions and alcohol consumption ; 2) to explore whether there are differences in these relationships between older (aged 16-17) and younger (aged 11-15) adolescents ; and 3) to explore how drinker and non-drinker prototypes are rated on a set of descriptive characteristics. The two age groups were compared based on literature indicating that drinking is normalised for 16-17 year olds (Newburn & Shiner, 2001) and 11-15 year olds are advised to avoid alcohol altogether (Donaldson, 2009).

Method

Participants

Adolescents ($N=178$) aged 11-17 ($M=14.81$; 51% female) were recruited through schools and parents. Participants and parents were given information about the study and they decided independently whether or not to take part. The only criteria for inclusion in the study was that adolescents had the means to complete the online survey, and, if under 16, could also provide a consent form signed by their parent. There were 87 participants aged 16-17 (62% female) and 91 aged 11-15 (44% female). No other background information was collected on the sample.

Design and Measures

A cross sectional anonymous survey was administered online. As in previous research (Zimmermann & Sieverding, 2010) prototype favourability was measured from 0 (extremely negative) to 100 (extremely positive) and similarity from 1 (not at all) to 7 (very). Participants were asked to rate how 18 characteristics (derived in focus groups (Davies, et al., 2013), see Table 3) described the typical drinker or non-drinker from 1 (not at all) to 7 (exactly like this).

Age and prototype perceptions in UK adolescents

Willingness to drink was also measured in the same way as previous research (Teunissen et al., 2012) using hypothetical scenarios: a family wedding, a house party and at the park, based on drinking experiences elicited in focus groups (Davies, et al., 2013). Participants indicated how likely it was that they would a) take a drink, or b) say no thanks, from 1 (unlikely) to 7 (likely) and a total score was calculated by reversing answers to b) (6 items; $\alpha=.932$). Participants rated intentions to drink alcohol in the next month from 1 (definitely do not) to 7 (definitely intend to).

Participants were asked *'have you ever had an alcoholic drink – a whole drink and not just a sip?'* as in national surveys (Fuller & Hawkins, 2014). They were asked about frequency of drunkenness in the last month (0 -9 or more times). Quantity of alcohol consumed was measured in the same way as previous research (Coleman, Ramm, & Cooke, 2010) by asking participants to report the number of pints, cans, bottles, glasses of wine, shots or alcopops they had when they usually drank. This was converted to approximate units.

A harm scale was constructed from a measure based on a scale used in a national survey (Fuller, 2013) and drawing on insights from focus groups (Davies, et al., 2013). Participants were asked to tick if any of the consequences had ever happened when they had been drinking (been sick, suffered from memory loss, embarrassed by something they had done, in trouble with the police, suffered an injury, taken to hospital, had a fight with someone, lost something belonging to them such as a phone or 'other' and to specify what). The number of harms that occurred were summed to comprise a harm score where a higher score (max = 9) indicated that more harm had been experienced.

The survey took 20-25 minutes to complete. The study was approved by XXXXXX University Ethics Committee (registration number XXXXXX).

Results

Descriptive statistics

The mean age of first drink was 13.09 and 64.67% had tried alcohol. The proportion of drinkers increased from 11.76% of 11 year olds, 50% of 14 year olds to 96% of 17 year olds. Of those aged 11-15, 38.20% reported ever having a drink, similar to the 39% reported in the most recent annual Smoking, Drinking and Drug Use Survey (Fuller & Hawkins, 2014). Of the 16-17 year olds, 94.88% had tried alcohol.

Aim 1: The relationship between prototypes, willingness, intentions and alcohol consumption

Significant positive correlations were found between drinker prototype perceptions (favourability and similarity), willingness to drink, intentions, alcohol consumption, drunkenness and harms ($p < .05$). Significant negative correlations were found between non-drinker prototype perceptions (favourability and similarity), willingness, intentions and harms ($p < .001$). Non-drinker prototype perceptions were not correlated with alcohol consumption, but non-drinker similarity was significantly correlated with drunkenness (see Table 1)

[Insert Table 1]

Regression analysis was used to explore if prototype variables predicted willingness. There was some evidence from the correlations reported in Table 1 that suggested that similarity might be the primary correlate of willingness and could be more important than favourability for predicting willingness. Thus, hierarchical regression was performed to enter prototype similarity at step one and add prototype favourability at step two. In step one the model predicted 49.2% of the variance in willingness ($R^2 = 49.7$, $F(2, 153) = 75.011$, $p < .001$). The R^2 change when drinker and non-drinker favourability are then added at step two showed that only 4.6% of additional variance in willingness is accounted for by including them in the model (54.4%) in total, ($R^2 = 54.4$, $F(4, 153) = 44.41$, $p < .001$). Overall, prototype perceptions account for a large proportion of the variance in willingness.

Age and prototype perceptions in UK adolescents

Three simple linear regression analyses were carried out with willingness as the predictor variable for the three self-reported alcohol behaviours. The results showed that willingness significantly predicted drunkenness ($\beta=.406, t(79)= 3.947, p<.001$) and explained 16.5% of the variance ($R^2= .165, F(1,79)=15.578, p<.001$). Secondly, willingness significantly predicted alcohol consumption ($\beta =.313. t(97)= 3.242, p<.001$) explaining 9% of the variance ($R^2= .107, F(1,98) = 10.512, p=.001$). Thirdly, willingness also significantly predicted harms $\beta =.414, t(105)= 4.66, p<.001$ and explained 17.1% of the variance ($R^2 = .171, F(1,106)= 21.713, p<.001$). The analyses show that willingness makes a significant contribution to the individual prediction of drunkenness, alcohol consumption and harms.

Aim 2: Age differences

Age groups were compared on PWM measures using a between subjects multivariate analysis of variance (MANOVA). Prototype perceptions, willingness and intentions entered as dependent variables. Using Pillai's trace, there was a significant effect of age group on prototype perceptions, willingness and intentions, ($V=.41, F(6, 146)=16.44, p<.001, partial \eta^2=.403$). These age differences are still present when drinking experience (age – age at first drink) is taken into account as a covariate ($V=.196, F(6,144)=5.84, p<.001, partial \eta^2=.196$).

The two age groups were then compared on alcohol consumption, drunkenness and harms. Using Pillai's trace, there was a significant effect of age group on these measures, $V=.19, F(3,72)=5.63, P=.002, partial \eta^2=.19$. When drinking experience is added as a covariate the difference between the age groups is reduced, but is still approaching significance $V=.10, F(3,70) =2.683, p=.053, partial \eta^2=.103$. T-tests (Table 2) confirmed that shows that age differences between the variables described in these analyses were significant with an appropriate adjusted alpha level.

[Insert Table 2]

Age and prototype perceptions in UK adolescents

Three subsequent sets of analyses, with age as the between subjects variable were performed to explore these differences. Where measures were on different scales, z scores were calculated. A two way ANOVA with favourability (drinker/non-drinker) as the repeated measures variable found a significant interaction between age and prototype, $F(1,152)=38.99, p<.001, \text{partial } \eta^2 =.204$, showing a greater difference between the favourability of drinkers and non-drinkers by 11-15 year olds; they were significantly more positive about non-drinkers and negative about drinkers (Figure 1).

[Insert Figure 1]

A two way ANOVA with age and similarity (drinker/non-drinker) found a significant interaction between age and similarity $F(1,152)=37.36, p<.001, \text{partial } \eta^2=.197$. For younger adolescents, non-drinker prototypes were rated as significantly more similar to the self ($M= 5.05, SD= 1.88$) than drinker prototypes ($M= 2.58 SD= 1.75$), however there was no significant difference between ratings of drinker and non-drinker prototype similarity for older participants (Figure 2).

[Insert Figure 2]

A two way ANOVA with age and determinant (willingness/intentions) found a significant interaction between age and determinant $F(1,164)=26.50, p<.001, \text{partial } \eta^2=.139$ (Figure 3). Willingness and intentions were similar in older participants; however there was a difference between the two measures in 11-15 year old participants, with willingness higher than intentions.

[Insert Figure 3]

Aim 3: Prototype characteristics

Drinker prototypes were rated highest on careless, sociable, fun, rebellious and confident. Non-drinker prototypes were rated highest on responsible, healthy and sensible. Principal

component analysis (PCA) was conducted on the 18 items for drinker prototypes items with an orthogonal rotation (varimax). Assumptions for PCA were met. Three components, explaining 61.5% of the variance in the data, were retained following an examination of the eigenvalues and the scree plot (Table 3).

[Insert Table 3]

Component one consisted of *responsible, sensible, respectful, grown-up, healthy* and *calm*; this factor was named 'responsibility'. The subsequent responsibility scale was found to be highly reliable ($\alpha=.918$). Component two consisted of *aggressive, careless, rebellious, tough, anti-social* and *stupid*; this factor was named 'rebelliousness'. This scale was found to be highly reliable ($\alpha=.802$). Component three consisted of *sociable, fun, boring* (reversed) *confident* and *cool*; this factor was named 'sociability'. This scale was found to be reliable ($\alpha=.733$). The items on the factors were summed to create new variables named 'drinker responsibility', 'drinker rebelliousness' and 'drinker sociability'.

Three components explaining 56.87% of the variance in the data were retained from PCA of non-drinker characteristics (Table 3). They were categorised in the same way as the typical drinker characteristics into 'non-drinker responsibility' (*sensible, responsible, healthy, respectful, grown-up, and calm*, $\alpha=.877$), 'non-drinker rebelliousness' (*aggressive, rebellious, careless, stupid* and *tough*, $\alpha=.722$) and 'non-drinker sociability' (*fun, sociable, cool, boring* (reversed), *anti-social* (reversed) and *confident*, $\alpha=.794$).

Pearson's correlations demonstrated that willingness was significantly positively correlated with 'drinker responsibility' ($r(158)=.406, p<.001$) and 'drinker sociability' ($r(159)=.448, p<.001$). Willingness was significantly negatively correlated with 'drinker rebelliousness' ($r(157)=-.249, p=.002$), and 'non-drinker responsibility' ($r(158)=-.205, p=.009$) and non-'drinker sociability' ($r(155)=-.387, p<.001$). Multiple regression analysis was conducted with willingness as the outcome variable, firstly with the three drinker scales, and secondly, with the three non-drinker scales as predictors. Together, the drinker scales predicted more of the

variance (24.1%) in willingness than the non-drinker scales (15.9%). However in both regression models, the sociability scale was the only significant predictor of willingness (drinker prototype; $\beta = .311$, $t(153) = 3.737$, $p < .001$; non-drinker prototype; $\beta = -.365$, $t(152) = 4.328$, $p < .001$).

Discussion

Prototype favourability and similarity were correlated with willingness as predicted by the PWM (Gerrard, et al., 2008). These measures were also related to intentions, alcohol consumption and harms, supporting the expectation that the PWM is related to risk behaviour in this population. More favourable and similar drinker prototypes were associated with greater willingness, intentions, alcohol consumption, drunkenness and harms, whereas for non-drinker images, generally the reverse pattern was found. Overall, prototype perceptions accounted for a large proportion of the variance in willingness. Willingness was also able to account for a significant proportion of the variance in self-reported alcohol use, drunkenness and harms. Drunkenness is a key factor in harmful longer term consequences for adolescents (Kuntsche et al., 2013), as well as short term harms such as accidents (Newbury-Birch, et al., 2009), thus reducing this behaviour is of paramount importance.

Analyses revealed significant differences between the two age groups on all measures.

Interactions between age and favourability and similarity were observed. There were greater differences between younger participants' ratings of favourability and similarity for both prototypes, whereas these differences were reduced in older respondents. These findings suggest that younger participants perceived the two alcohol prototypes as more distinct. The age differences in PWM measures remained when drinking experience was controlled for. It is possible that both age and experience are important in explaining the relationship between prototypes and willingness, and the shift from willingness to drink to intentional planned drinking behaviour.

Age and prototype perceptions in UK adolescents

The significant interaction between age and behavioural determinant indicated that for 16-17 year old participants, willingness and intention measures were similar, whereas for 11-15 year olds they appeared to capture something different. For these younger respondents, willingness was higher than intentions, indicating that, in line with the assumptions in the PWM, those who were not intending to drink, may still recognise that they are open to the opportunity in a particular social context. This means that targeting willingness may be more appropriate in younger, but not older adolescents.

Previous studies suggest a shift from reactive to planned behaviour with age and experience (Pomery, Gibbons, Reis-Bergan, & Gerrard, 2009), and that the PWM is better at explaining adolescent drinking than young adult drinking (Todd, Kothe, Mullan, & Monds, 2014). Our findings indicate that the social reaction pathway in the PWM may be better able to explain alcohol consumption in younger compared to older adolescents in the UK who have less experience of drinking.

Three underlying prototype dimensions related to sociability, responsibility and rebelliousness were identified. Adolescents who rated drinker prototypes highly on responsibility and sociability (more pro-social, positive traits) reported higher levels of willingness to drink. The sociability scale predicted more of the variance in willingness than the responsibility or disruptiveness scales. This analysis resulted in similar dimensions to Zimmermann and Sieverding (2011) who identified 'sociability/hedonism' and 'responsibility' scales in a sample of young adults, and concluded that the former should be targeted in their sample. Our study builds on this by applying the exploration of characteristics in a younger sample. In addition, the present study identified an additional distinct scale named 'rebelliousness', which may be explained by age of the participants, for whom drinking alcohol was a forbidden activity. The sociability scales included descriptions such as confidence, coolness and boring, which may be important to younger adolescents who are forming their identity and self-image (Spijkerman, van den Eijnden, & Engels, 2005).

The cross sectional design of this study limits conclusions about causal mechanisms. The sample size and opportunistic nature of sampling is a further limitation that prevents us from making firm inferences about the representativeness of our final sample. Conducting alcohol research with under 16s is challenging for many reasons, including the requirement to gain parental as well as child consent (Tyler & Davies, 2013); this can limit the potential pool of respondents (Tigges, 2003), and may also mean that confidentiality is doubted. Whilst the study has good internal validity, the potential generalizability of the results to other population groups is unclear. Willingness and intentions were highly correlated, suggesting they share similar properties. Questionnaire measures of willingness have been criticised for failing to tap into the automatic nature of this construct because they involve some deliberation (Fishbein, 2008). To overcome this Comello and Slater (2011) measured reaction times to willingness questions. It is also possible that an indirect measure, for example using implicit attitudes, may be more able to capture willingness; further exploration of an appropriate means of measuring adolescents' propensity to engage in unplanned drinking is needed.

Despite these limitations, this study has applied the PWM in a younger adolescent population than previously explored in the UK and suggests those aged 11-15 may be a potential focus for future harm-reduction interventions that aim to reduce willingness to drink. Such an intervention that targets drinker prototypes and addresses the risky nature of unplanned drinking may have the potential to reduce willingness to drink in this population. Relevant behaviour change techniques should be directed at changing prototypes in order to impact willingness, and therefore the potential harms associated with adolescent drinking.

References

- Alcohol Concern. (2011). Factsheet: Young people and alcohol Retrieved 28th June, 2012, from <http://www.alcoholconcern.org.uk/assets/files/Publications/Young%20People%20%20factsheet%20Dec-2010.pdf>
- Andrews, J. A., Gordon, J. S., Hampson, S. E., Christiansen, S. M., Gunn, B., Slovic, P., & Severson, H. H. (2011). Short-Term Efficacy of Click City (R): Tobacco: Changing Etiological Mechanisms Related to the Onset of Tobacco Use. *Prevention Science, 12*(1), 89-102. doi: 10.1007/s11121-010-0192-3
- Arnett, J. J. (2007). Emerging Adulthood: What Is It, and What Is It Good For? *Child Development Perspectives, 1*(2), 68-73.
- Blanton, H., VandenEijnden, R., Buunk, B. P., Gibbons, F. X., Gerrard, M., & Bakker, A. (2001). Accentuate the negative: Social images in the prediction and promotion of condom use. *Journal of Applied Social Psychology, 31*(2), 274-295.
- Coleman, L., Ramm, J., & Cooke, R. (2010). The effectiveness of an innovative intervention aimed at reducing binge drinking among young people: Results from a pilot study. *Drugs-Education Prevention and Policy, 17*(4), 413-430. doi: 10.3109/09687630802572599
- Comello, M. L. G. (2011). Characterizing Drug Non-Users as Distinctive in Prevention Messages: Implications of Optimal Distinctiveness Theory. *Health Communication, 26*(4), 313-322. doi: 10.1080/10410236.2010.550022
- Davies, E. L., Martin, J., & Foxcroft, D. R. (2013). Young people talking about alcohol: Focus groups exploring constructs in the Prototype Willingness Model. *Drugs: education, prevention and policy, 20*(4), 269-277. doi: 10.3109/09687637.2012.726662
- Donaldson, L. (2009). *Guidance on the Consumption of Alcohol by Children and Young People from The Chief Medical Officer*. London: Department of Health Publications.
- Fishbein, M. (2008). A Reasoned Action Approach to Health Promotion. *Medical Decision Making, 28*(6), 834-844. doi: 10.1177/0272989x08326092
- Foxcroft, D. R., & Tsertsvadze, A. (2012). Universal alcohol misuse prevention programmes for children and adolescents: Cochrane systematic reviews. *Perspectives in Public Health, 132*(3). doi: 10.1177/1757913912443487
- Fuller, E., & Hawkins, V. (2014). Smoking, Drinking and Drug use among young people in England in 2013. London: Health and Social Care Information Centre.
- Gerrard, M., Gibbons, F. X., Houlihan, A. E., Stock, M. L., & Pomery, E. A. (2008). A dual-process approach to health risk decision making: The prototype willingness model. *Developmental Review, 28*(1), 29-61. doi: 10.1016/j.dr.2007.10.001
- Gerrard, M., Gibbons, F. X., Reis-Bergan, M., Trudeau, L., Vande Lune, L. S., & Buunk, B. (2002). Inhibitory effects of drinker and nondrinker prototypes on adolescent alcohol consumption. *Health Psychology, 21*(6), 601-609. doi: 10.1037//0278-6133.21.6.601
- Gibbons, F. X., & Gerrard, M. (1995). Predicting Young-Adults Health Risk Behavior. *Journal of Personality and Social Psychology, 69*(3), 505-517.
- Gibbons, F. X., Gerrard, M., & Lane, D. J. (2003). A social reaction model of adolescent health risk. In J. Sullis, M & K. A. Wallston (Eds.), *Social psychological foundations of health and illness* (pp. 107-136). Oxford, England: Blackwell.
- Gibbons, F. X., Gerrard, M., Ouellette, J. A., & Burzette, R. (1998). Cognitive antecedents to adolescent health risk: Discriminating between behavioral intention and behavioral willingness. *Psychology & Health, 13*(2), 319-339.
- Gibbons, F. X., Gerrard, M., Ouellette, J. A., & Burzette, R. (2000). Discriminating between behavioural intention and behavioural willingness: Cognitive antecedents to adolescent health risk. In P. Norman, C. Abramam & M. Conner (Eds.), *Understanding and changing health behaviour: From health beliefs to self-regulation* (pp. 137-161). Amsterdam: Harwood Academic.

- Hibell, B., Guttormsson, U., Ahlstrom, S., Balakireva, O., Bjarnason, T., Kokkevi, A., & Kraus, L. (2012). The 2011 ESPAD Report. Substance Use Among Students in 36 European Countries. Stockholm, Sweden.
- Kelly, A. B., Chan, G. C. K., Toumbourou, J. W., O'Flaherty, M., Homel, R., Patton, G. C., & Williams, J. (2012). Very young adolescents and alcohol: Evidence of a unique susceptibility to peer alcohol use. *Addictive Behaviors*, *37*(4), 414-419. doi: 10.1016/j.addbeh.2011.11.038
- Kuntsche, E., Rossow, I., Simons-Morton, B., Ter Bogt, T., Kokkevi, A., & Godeau, E. (2013). Not Early Drinking but Early Drunkenness Is a Risk Factor for Problem Behaviors Among Adolescents from 38 European and North American Countries. *Alcoholism-Clinical and Experimental Research*, *37*(2), 308-314. doi: 10.1111/j.1530-0277.2012.01895.x
- Newburn, T., & Shiner, M. (2001). Teenage Kicks? Young people and alcohol: a review of the literature. York.
- Newbury-Birch, D., Walker, J., Avery, L., Beyer, F., Brown, N., Jackson, K., . . . Stewart, S. (2009). Impact of Alcohol Consumption on Young People: A Systematic Review of Published Reviews. Newcastle: Newcastle University.
- Pomery, E. A., Gibbons, F. X., Reis-Bergan, M., & Gerrard, M. (2009). From Willingness to Intention: Experience Moderates the Shift From Reactive to Reasoned Behavior. *Personality and Social Psychology Bulletin*, *35*(7), 894-908. doi: 10.1177/0146167209335166
- Powell, K. (2006). How does the teenage brain work? *Nature*, *442*(7105), 865-867. doi: 10.1038/442865a
- Rivis, A., Sheeran, P., & Armitage, C. J. (2006). Augmenting the theory of planned behaviour with the prototype/willingness model: Predictive validity of actor versus abstainer prototypes for adolescents' health-protective and health-risk intentions. *British Journal of Health Psychology*, *11*, 483-500. doi: 10.1348/135910705x70327
- Rivis, A., Sheeran, P., & Armitage, C. J. (2010). Explaining adolescents' cigarette smoking: A comparison of four modes of action control and test of the role of self-regulatory mode. *Psychology & Health*, *25*(8), 893-909. doi: 10.1080/08870440902850310
- Rivis, A., Sheeran, P., & Armitage, C. J. (2011). Intention versus identification as determinants of adolescents' health behaviours: evidence and correlates. *Psychology & Health*, *26*(9), 1128-1142. doi: 10.1080/08870440903427365
- Spijkerman, R., van den Eijnden, R., & Engels, R. (2005). Self-comparison processes, prototypes, and smoking onset among early adolescents. *Preventive Medicine*, *40*(6), 785-794. doi: 10.1016/j.ypmed.2004.09.025
- Teunissen, H. A., Spijkerman, R., Prinstein, M. J., Cohen, G. L., Engels, R., & Scholte, R. H. J. (2012). Adolescents' Conformity to Their Peers' Pro-Alcohol and Anti-Alcohol Norms: The Power of Popularity. *Alcoholism-Clinical and Experimental Research*, *36*(7), 1257-1267. doi: 10.1111/j.1530-0277.2011.01728.x
- Tigges, B. B. (2003). Parental consent and adolescent risk behavior research. *Journal of Nursing Scholarship*, *35*(3), 283-289. doi: 10.1111/j.1547-5069.2003.00283.x
- Todd, J., Kothe, E., Mullan, B., & Monds, L. (2014). Reasoned versus reactive prediction of behaviour: a meta-analysis of the prototype willingness model. *Health Psychology Review*, 1-24. doi: 10.1080/17437199.2014.922895
- Tyler, R., & Davies, E. L. (2013). Recruitment issues in school-based drug and alcohol research with young people. *PsyPAG Quarterly*, *87*(1), 29-33.
- van Lettow, B., de Vries, H., Burdorf, A., & van Empelen, P. (2014). Quantifying the strength of the associations of prototype perceptions with behaviour, behavioural willingness and intentions: a meta-analysis. *Health Psychology Review*, 1-19. doi: 10.1080/17437199.2014.941997
- Van Lettow, B., Vermunt, J. K., de Vries, H., Burdorf, A., & van Empele, P. (2012). Clustering of drinker prototype characteristics: What characterizes the typical drinker? *British Journal of Psychology, Online first 26th October 2012*. doi: 10.1111/bjop.12000
- Zimmermann, F., & Sieverding, M. (2010). Young adults' social drinking as explained by an augmented theory of planned behaviour: The roles of prototypes, willingness, and

gender. *British Journal of Health Psychology*, 15, 561-581. doi:
10.1348/135910709x476558

Zimmermann, F., & Sieverding, M. (2011). Young adults' images of abstaining and drinking: Prototype dimensions, correlates and assessment methods. *Journal of Health Psychology*, 16(3), 410-420. doi: 10.1177/1359105310373412

Tables and figures

Table1. Correlations and significance levels between prototypes, willingness, intentions and alcohol consumption for the whole survey sample

	DPF	DPS	NDF	NDS	W	Int	A	D
Mean (SD)	49.04(25.85)	3.40(1.95)	68.99(20.65)	4.44(1.97)	24.49(11.59)	7.05(6.64)	11.73(8.64)	2.19(2.17)
Drinker prototype favourability (DPF)								
Drinker prototype similarity (DPS)	.724**							
Non-drinker favourability(NDF)	-.242**	-.298**						
Non-drinker similarity (NDS)	-.356**	-.545**	.640**					
Willingness (W)	.542**	.604**	-.467**	-.621**				
Intentions (Int)	.482**	.598**	-.389**	-.518**	.725**			
Alcohol consumption (A)	.299**	.330**	-.172	-.188	.313**	.321**		
Drunkenness (D)	.236*	.325**	-.175	-.358**	.406**	.394**	.303**	
Harms (H)	.384**	.504**	-.291**	-.580**	.414**	.425**	.519**	.513**

Note ** $p < .001$ * $p < .05$

Table 2 Means, standard deviations T-tests to compare 11-15 and 16-17 year old participants on survey measures of prototypes, willingness, intentions and alcohol consumption

Mean (SD)	Age		t statistic	Effect size
	11-15	16-17		
Drinker prototype favourability	37.85 (26.33)	61.15 (18.23)	6.40**	.47
Drinker prototype similarity	2.58 (1.75)	4.31 (1.77)	6.29**	.44
Non-drinker prototype favourability	74.05 (22.45)	64.29 (3.57)	3.04*	.23
Non-drinker prototype similarity	5.05 (1.88)	3.78 (1.87)	4.29**	.32
Willingness	19.66 (10.80)	29.79 (10.07)	6.31**	.44
Intentions	2.57 (1.97)	5.47 (2.11)	9.18**	.58
Drunkenness	1.65 (0.70)	3.61(2.11)	6.27**	.59
Alcohol consumption	7.15 (6.74)	13.19 (8.73)	3.68**	.30
Harms	1.00 (1.52)	2.71 (2.22)	4.64**	.45

Note ** $p < .001$, * $p < .005$ (alpha level adjusted to .005 to account for multiple comparisons)

Table 3 Summary of exploratory factor analysis results for the typical **drinker prototype** and **typical non-drinker prototype** characteristics (loadings of less than .1 have been suppressed)

Item	Rotated Factor Loadings					
	Drinker Prototype			Non-drinker Prototype		
	responsibility	rebelliousness	sociability	responsibility	rebelliousness	sociability
responsible	.854	-.210	.152	.815	-.230	
sensible	.817	-.254		.819	-.240	.153
respectful	.810	-.297	.127	.756	-.122	.225
Grown-up	.790		.329	.695		.217
healthy	.768	-.107	.273	.767	-.175	.147
Calm	.738	-.241		.624	-.188	.269
Aggressive	-.252	.794	-.147	-.342	.758	
Careless	-.419	.714		-.227	.646	
Rebellious	-.339	.671		-.429	.655	
Tough	.270	.594	.249	.307	.452	.239
Anti-social		.582			.483	-.589
stupid	-.507	.565	-.247	-.407	.630	-.278
Pressured ^a	-.169	.277	-.150		.334	-.376
Sociable	.297		.752	.320		.700
fun	.374		.707	.238		.787
boring		.352	-.653	-.227	.299	-.675
Confident			.615		.316	.555
Cool	.545		.573	.364		.682
Eigenvalues	7.083	2.2	1.77	6.21	1.69	2.33
% of Variance	39.35	12.232	9.921	34.518	9.37	12.99
α	.918	.802	.733	.877	.722	.794

^a Note: pressured was not included in the reliability analyses due to low factor loadings

Age and prototype perceptions in UK adolescents

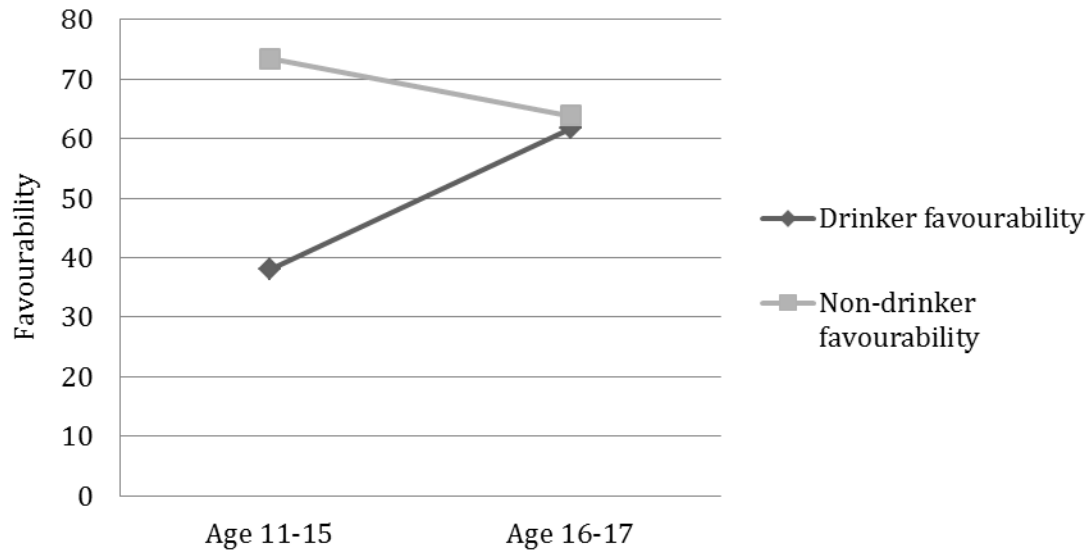


Figure 1 Favourability of drinker and non-drinker prototypes by age group

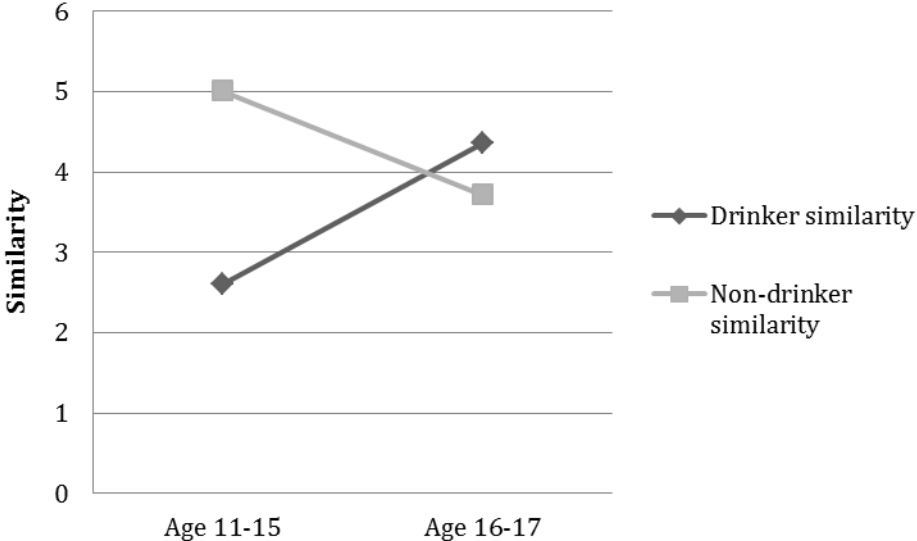


Figure 2 Similarity of drinker and non-drinker prototypes by age group

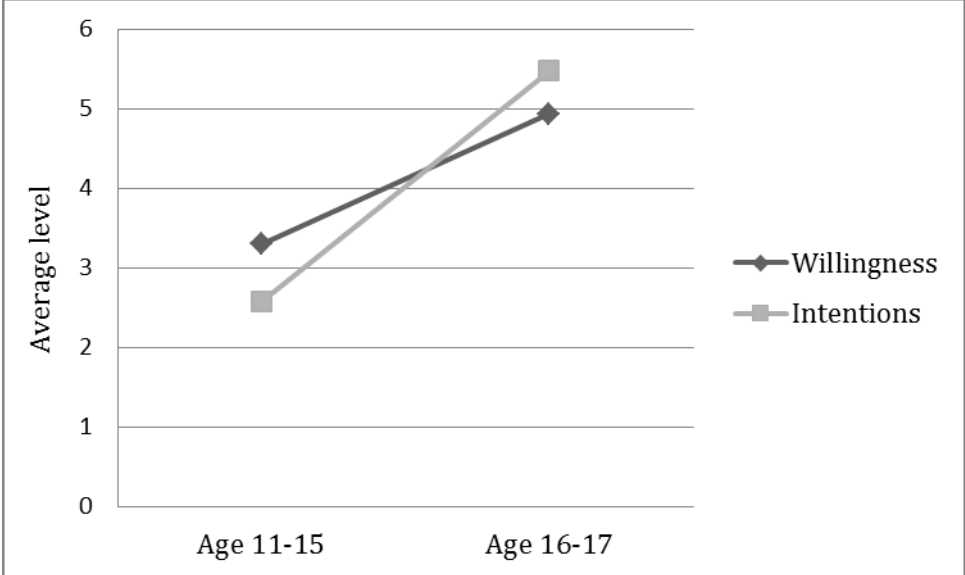


Figure 3 Willingness and intentions to drink by age group