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The Role of Moral Disengagement in Underage Drinking and Alcohol-related Harm

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Abstract

Objectives: The current study had two aims. First, to develop a moral disengagement scale contextualized to underage drinking. Second, to investigate Bandura's (1986) self-regulatory model within the context of underage drinking.

Method: Two different samples of students participated in the study. The first sample included 619 (362 females) adolescents (Mage = 15.3 years, SD = 1.09 years) and the second sample 636 (386 females) adolescents (Mage = 15.3 years, SD = 1.03 years). Students in the first sample completed the Underage Drinking Disengagement Scale (UDDS), and measures of engagement in underage drinking and heavy episodic drinking. Students in the second sample completed these measures as well as scales of general moral disengagement, personal standards and anticipatory guilt associated with underage drinking.

Results: For the UDDS, exploratory and confirmatory factor analyses verified a single factor structure. The UDDS was more strongly associated with engagement in underage drinking and heavy episodic drinking than a general measure of moral disengagement. A moderated mediation analysis revealed that adolescents who negatively evaluated underage drinking reported more anticipatory guilt, and more anticipatory guilt was associated with less engagement in underage drinking and less heavy episodic drinking. This relationship was weaker at high compared to low levels of underage drinking disengagement.

Conclusions/Importance: Understanding how adolescents self-regulate their drinking, and ways that such self-regulation may be deactivated or disengaged, may help identify those adolescents at increased risk of drinking underage and of engaging in heavy episodic drinking.

Adolescence is a time of expanding roles and responsibilities for young people (Masten, Faden, Zucker, & Spear, 2008). Most adolescents navigate this period successfully, exercising control over their behavior in line with internalized social standards (Bandura, 2006). However, a significant number of adolescents engage in socially transgressive behaviors such as delinquent acts, illicit substance use, and underage drinking (Eaton et al., 2011; McAtamney & Morgan, 2009). The prevalence of underage drinking and the severity of its negative outcomes make it a particularly problematic behavior. Early initiation of alcohol consumption and heavy episodic drinking during adolescence have been shown to place youth at a risk of long-term alcohol abuse and dependence (Buchmann et al., 2009; Guttmanova et al., 2011; Pitkänen, Kokko, Lyyra & Pulkkinen, 2008). Extensive research has examined factors associated with adolescents' initial engagement in underage drinking and adolescents' heavy episodic drinking, including genetic vulnerability, personality traits, and social factors (Gentle-Genitty, 2010; McAdams, Rowe, Rijdsdijk, Maughan, & Eley, 2012; Morgado & Vale-Dias, 2013). Moral processes, such as moral disengagement, have also been advanced to explain why adolescents may drink underage, and engage in heavy episodic drinking despite legal restrictions and possible harmful consequences of alcohol use (Amonini & Donovan, 2006; Newton, Barrett, Swaffield, & Teesson, 2014). Moral disengagement is the social cognitive process whereby individuals justify or excuse transgressive behavior without being constrained by self-sanctions (Bandura, 2002).

The degree to which adolescents justify or excuse delinquent behavior has been associated with their propensity to drink underage and to drink in a risky manner (Newton, Havard, & Teesson, 2012; Newton et al., 2014). However, moral disengagement is a context specific process, whereby individuals justify specific transgressive behaviours (Bandura, 1986). Indeed, moral disengagement scales contextualized to transgressive behaviors, such as school bullying, antisocial sporting behaviors and violations of civic responsibilities, are

more strongly related to such behaviors than a broad-based moral disengagement scale covering a range of transgressive behaviors (Boardley & Kavussanu, 2007; Caprara, Fida, Vecchione, Tramontano, & Barbaranelli, 2009; Gini et al., 2013). To more appropriately assess moral disengagement for underage drinking it is therefore important to use a moral disengagement scale contextualized to underage drinking. Consequently, the first aim of the current study was to devise such a scale, the *Underage Drinking Disengagement Scale* (UDDS).

Moral disengagement scales have been developed based on Bandura's (1986, 2002) eight moral disengagement mechanisms. Six of these moral disengagement mechanisms were contextualized to underage drinking and subsequently included in the UDDS. These mechanisms included: giving underage drinking a social or moral purpose (*moral justification*), renaming or relabeling underage drinking (*euphemistic labeling*), comparing underage drinking to something more grievous (*advantageous comparison*), placing responsibility for underage drinking on an authority figure (*displacement of responsibility*), spreading responsibility among a group (*diffusion of responsibility*) and, disregarding, distorting or minimizing the consequences of underage drinking (*minimizing the consequences*). The final two disengagement mechanisms, which focus on victims (i.e. blaming the victim for the transgression, or stripping the victim of their human qualities) did not form part of the UDDS. This is because the UDDS focuses on adolescents' justifications for underage drinking, not on their justifications for the secondary consequences of alcohol consumption, such as heightened aggressive behavior against targeted victims.

For the UDDS to have utility in interventions targeting initial engagement in underage drinking and heavy episodic drinking, it is important to establish that underage drinking disengagement operates in the same way as proposed by Bandura (1986) in his social cognitive theory model of self-regulation. Bandura's (1986) model of self-regulation posits

that personal standards of right and wrong are adopted, through a process of socialization, and act as a guide for behavior. Once developed, behavior is then monitored and self-regulated in accord with these personal standards (Bandura, 1986). Anticipation of negative self-evaluative reactions, such as anticipatory guilt, deters engagement in transgressive behavior, keeping behavior in line with personal standards (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). However, the relationship between personal standards and anticipatory self-evaluative reactions does not operate as a fixed regulator of behaviour (Bandura, 2002). This relationship can be deactivated by invoking moral disengagement strategies. Such deactivation enables behavior that violates personal standards to be performed free of self-censure (Bandura, 1986). While this self-regulatory model has been examined in other domains, it has not been examined for underage drinking. Therefore, the second aim of the current study was to examine Bandura's self-regulatory model in the context of adolescents' engagement in underage drinking and adolescents' heavy episodic drinking. This was achieved in two steps using a moderated mediation model (see Figure 1).

The first step involved an examination of the relationship between personal standards, anticipatory guilt and both initial engagement in underage drinking and drinkers' level of engagement in heavy episodic drinking. Adolescents who hold a personal standard that alcohol and substance use is wrong, or who believe they have a personal responsibility to adhere to underage drinking laws, have been found to use less alcohol and to engage in less heavy episodic drinking (Abide, Richards, & Ramsey, 2001; Amonini & Donovan, 2006; Reyna et al., 2013). Additionally, high levels of anticipatory guilt have been associated with low alcohol consumption and alcohol abstinence (Caffray & Schneider, 2000; Dearing, Stuewig, & Tangney, 2005; Quiles, Kinnunen, & Bybee, 2001). Therefore, in line with previous research, and in accord with Bandura's (1986) model of self-regulation, it is expected that the more negatively adolescents judge underage drinking, the more guilt they

would anticipate, and the less they would engage in underage drinking or if they did drink, the less they would engage in heavy episodic drinking.

The second step in examining Bandura's self-regulatory model in the context of underage drinking and drinkers' levels of heavy episodic drinking, involved an investigation of whether the above relationship varies as a function of underage drinking disengagement. Not all adolescents who believe underage drinking is wrong, or that they should adhere to underage drinking laws, have been found to abstain from drinking alcohol or to minimize their engagement in heavy episodic drinking if they do drink (Abide et al., 2001; Reyna et al., 2013). According to Bandura's self-regulatory model, this is because holding personal standards does not automatically result in moral conduct (Bandura et al., 1996). By invoking disengagement strategies, the negative self-evaluative reactions that would normally arise at the prospect of violating a personal standard, and would normally deter engagement in transgressive behavior, are not activated, or their activation is reduced (Bandura, 2002). Such deactivation enables behavior which violates personal standards to be performed because anticipatory guilt is reduced or not experienced. Indeed, it has been found that moral disengagement is associated with lower anticipatory guilt and higher engagement in transgressive behavior (Bandura et al., 1996; Stanger, Kavussanu, Boardley, & Ring, 2013). In line with this research and Bandura's self-regulatory model, it is expected that the relationship between personal standards and anticipatory guilt would vary as a function of underage drinking disengagement. In particular, it is anticipated, that the greater the propensity to invoke disengagement strategies the weaker the relationship between personal standards and anticipatory guilt.

In summary, the first aim of the current study was to develop the UDDS. Similar to other moral disengagement scales, although disengagement mechanisms will be individually assessed, they are expected to be highly interrelated and form part of a single underlying

construct (Bandura et al., 1996; Paciello, Fida, Tramontano, Lupinetti, & Caprara, 2008). Consistent with other moral disengagement scales, it was anticipated that males would have higher disengagement scores than females (Bandura et al., 2001; Barchia & Bussey, 2011; Lucidi et al., 2008) and that younger students would have higher disengagement scores than older students (Paciello et al., 2008). It was further expected that the UDDS would be strongly associated with a general moral disengagement scale. However, given the use of items specific to underage drinking, it was expected that the UDDS would relate to both engagement in underage drinking and drinkers' levels of heavy episodic drinking over and above the relationship obtained with a general moral disengagement scale.

The second aim of this study was to examine Bandura's self-regulatory model within the domain of underage drinking using a moderated mediation model. It was hypothesized that negative judgment about underage drinking would be associated with high anticipatory guilt, which would relate to low engagement in underage drinking and low levels of heavy episodic drinking. It was further anticipated that this relationship would be weakest at high levels of underage drinking disengagement, such that individuals who disengaged would be less likely to anticipate guilt and more likely to engage in underage drinking and to have high levels of heavy episodic drinking.

The present study focused on 13 to 17 year old adolescents, since many adolescents consume their first full drink alcohol from early to mid-adolescence (Australian Institute of Health and Welfare [AIHW], 2011) and underage drinking has been shown to sharply increase from approximately 15 years of age (Gutman, Eccles, Peck, & Malanchuk, 2011). Consistent with Bandura's self-regulatory model (Bandura, 1986), the relationship between personal standards, anticipatory guilt, disengagement and underage drinking is expected to be consistent across gender and grade. However, gender and grade will be controlled in all

analyses as previous research has found mean grade and gender differences for these variables (Barchia & Bussey, 2011; Young, Sweeting, & West, 2007).

Method

Participants

To enable the factor structure of the UDDS to be tested and then replicated with two different samples, two different groups of students participated in the study. The first sample was collected in the autumn of 2010 and included 619 (362 females) predominantly White Australian (80%) adolescents in grades 9 ($n = 309$, $M_{\text{age}} = 14.33$, age range: 13-16 years) and 11 ($n = 310$, $M_{\text{age}} = 16.21$, age range: 15-17 years) from four non-government secondary schools. The second sample was collected in the summer of 2010 and included 636 (386 females) predominantly White Australian (88%) students in grades 9 ($n = 405$, $M_{\text{age}} = 14.66$ years, age range: 14-16 years) and 11 ($n = 231$, $M_{\text{age}} = 16.53$, age range: 16-17 years) from four non-government secondary schools.

Schools were selected through convenience sampling, with schools from Sydney metropolitan and regional areas invited to participate in the study. Information and consent forms were sent home to parents/guardians of all Year 9 and 11 students from participating schools. Parents provided passive consent for their child's participation in the study by returning the consent letters if they did not wish their child to participate in the study. For both samples, less than 3% of parents returned these forms, indicating that they did not want their child to participate in the survey, resulting in at least a 97% participation rate. On the day of testing, students were informed verbally and in writing that their answers were anonymous, that their parents and teachers would not see their individual answers, and that they could withdraw from the study at any time. All students provided written assent to participate in the study. Students were not compensated for their participation.

Measures

All students completed the UDDS and alcohol use items. Students in the second sample also completed measures of general moral disengagement, personal standards and anticipatory guilt.

Underage drinking disengagement. The content of the UDDS items was based on pilot interviews with 10 high school students who were asked to spontaneously list common justifications for underage drinking. To ensure the UDDS items reflected the different moral disengagement mechanism, the wording of the justifications proposed by the students were adapted from Bandura et al.'s (1996) moral disengagement scale for delinquency (13 items), Lucidi et al.'s (2008) moral disengagement scale for steroid use (4 items) and Paceillo et al.'s (2008) adolescent moral disengagement scale (4 item). These moral disengagement scales were selected due to their applicability to youth and their foundation in Bandura's social cognitive theory. Bandura et al.'s (1996) original moral disengagement scale has demonstrated congruent and discriminant validity, with evidence that this moral disengagement measure positively relates to delinquency and antisocial conduct, and negatively relates to prosocial behavior (Bandura et al., 1996). Lucidi et al.'s (2008) scale specifically applied moral disengagement to steroid use in sport, and was shown to predict greater steroid use by athletes. Paciello et al.'s (2008) scale was an adaption of Bandura et al.'s (1996) original scale, with modifications to increase the scale's applicability to adolescents. Higher disengagement, as measured by this scale, has been associated with more aggression and violent acts throughout adolescence (Paciello et al., 2008).

A total of 34 items were created, which covered the six mechanisms of disengagement used in this study. The 34 items were rated by 18 experts (i.e. alcohol or moral disengagement researchers and high school teachers) on a 5-point scale from 1 = *very poor* to 5 = *very good* to determine the applicability of each item to a teenage population and to the

disengagement mechanism being measured. Items with an average of lower than a score of 4 (good) were removed. Items were then inspected to ensure they did not cross-over mechanisms. A total of 18-items (3-items per mechanism) were included for analysis in the final scale (see Table 1). Students rated each item on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*). Higher UDDS scores indicated greater disengagement to underage drinking.

Alcohol Consumption. Alcohol use items were taken from the SHAHRP ‘Patterns of Alcohol Use’ measure (McBride, Farrington, Meuleners, & Midford, 2006; Newton, Vogel, Teesson, & Andrews, 2009). To assess engagement in underage drinking, students’ lifetime drinking was assessed through the item “have you ever tried alcohol?” A 3-point response scale was used (0 = No; 1 = yes, a sip or a taste; 2 = Yes, I’ve had at least a full standard drink of alcohol) and a full standard drink (10g of alcohol) was visually depicted. For those students who had consumed a full standard drink, heavy episodic drinking was assessed through the composite of two standardized items: ‘In the past 3 months, how often have you had more than four standard drinks in a day’ (0 = *never* to 7 = *everyday*) and ‘On the last occasion that you drank more than four standard drinks in a day how many drinks did you actually have?’ (1 = 4-5 to 5 = 13 or more). More than four standard drinks was included as the measure of heavy episodic drinking because this is the most common classification for heavy episodic drinking in adolescent assessments (AIHW, 2011; Johnston, O’Malley, Bachman, & Schulenberg, 2012; Hibell et al., 2012; White & Bariola, 2012). This is based on evidence that consuming more than four alcoholic beverages on a single occasion, brings an adult’s blood alcohol concentration to 0.08 grams, a level of objective intoxication (National Institute of Alcohol Abuse and Alcoholism [NIAAA], 2004), and that consuming more than four standard drinks doubles an adult’s risk of injury (Australian National Health and Medical Research Council [NHMRC], 2009).

General moral disengagement. Paciello et al.'s (2008) 32 item adolescent moral disengagement scale was used in this study. Students were asked to rate, on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*) how much they agreed with the items measuring different moral disengagement mechanisms. Minor modifications were made, subsequent to pilot testing, to increase the cultural sensitivity and comprehensibility of the questions within the present sample. These modifications included the word 'youth' changed to 'teenager', 'obnoxious' changed to 'irritating' (*to hit an irritating friend is just giving them "a lesson"*), the word 'worm' changed to 'jerk' (*It is ok to treat someone badly who behaved like a "jerk"*), 'honor' changed to 'reputation' (*It is alright to fight when your group's reputation is threatened*) and 'fly off the handle' changed to 'lose your temper' (*It is alright to lose your temper if someone is being mean to your friends*). The scale had good internal reliability, $\alpha = .93$.

Alcohol personal standards. The alcohol personal standards scale was based on Bussey's (1999) personal standards scale, a measure grounded in social cognitive theory, used to assess standards of truth and lie telling. Using this measure children were shown to judge truths more positively and lies more negatively (Bussey, 1999). To assess alcohol personal standards Bussey's (1999) original scale was scale was modified to refer to alcohol use. Students rated "how good or bad is it for someone your age" to consume different quantities of alcohol, ranging from "one full standard drink" to "more than six standard drinks". Students responded on a 6-point scale (1 = *very good* to 6 = *very bad*). Higher personal standards scores indicated greater negative judgment of underage drinking. The scale had good internal reliability, $\alpha = .94$.

Alcohol guilt. The alcohol guilt scale was based on Bussey's (1999) internal evaluative reactions scale, which was an operationalization of social cognitive theory's self-evaluative reactions in the context of truth and lie telling. Children were shown to anticipate more guilt

for telling lies, particularly antisocial lies, than for telling the truth (Bussey, 1999). The same response scale employed by Bussey (1999) was used to assess alcohol guilt. Students were asked “would you feel guilty about yourself” for having consumed different quantities of alcohol, responding on a 4-point scale (1 = *not at all* to 4= *very guilt*). Students answered six items relating to quantities of alcohol consumption, ranging from “one full standard drink” to “six or more standard drinks”. The scale had good internal reliability, $\alpha = .95$.

Missing Data

Missing data at the item level were between 0 and 1.7%. All missing data were imputed using the expectation-maximization (EM) algorithm in SPSS. This procedure has been shown to be superior to means substitution, pair-wise deletion or list-wise deletion (Enders, 2001; Schafer & Graham, 2002).

Procedure

Testing occurred in groups of approximately 20 students in classrooms or in groups of approximately 100 students in large assembly rooms, which were set up with individual desks, spaced evenly in rows throughout the room. All testing was conducted under the supervision of research assistants and school teachers under examination-like conditions, in a 45 to 50 minute session. To ensure confidentiality, during the administration of the surveys students sat at a distance from each other and were asked not to discuss their responses with their peers after the testing session. Students were informed that if they wished to discuss their responses they could speak to the research team or school counselor.

Results

Statistical Analysis

First, the results of the exploratory (conducted on sample 1) and confirmatory factor analysis (conducted on sample 2) for the UDDS are presented. Next, is an analysis of examining whether underage drinking disengagement scores differed between the two

samples, or differed by gender, grade and drinking status. The UDDS is then compared to a general moral disengagement scale, first through correlational analysis, then through two hierarchical regressions. In the hierarchical regressions, engagement in underage drinking and heavy episodic drinking are regressed on the UDDS, whilst controlling for a general moral disengagement scale. These, and subsequent analyses, were conducted with sample 2. Finally, consistent with previous research (Berndt et al., 2012), the proposed moderated mediation was examined in two steps. First, two mediational analyses are presented examining the indirect effect of personal standards on underage drinking and heavy episodic drinking, through anticipatory guilt, using a combination of Baron and Kenny's (1986) mediational framework and Preacher and Hayes (2008) INDIRECT procedure. Then, a moderated mediation is examined in accord with Edwards and Lambert's (2007) first stage moderation model using Preacher, Rucker and Hayes' (2007) approach (see Figure 1).

Alcohol Use

Consistent with population based Australian surveys (Australian Institute of Health and Welfare, 2011), a large proportion of adolescents had consumed alcohol (sample 1 = 84%, sample 2 = 89%) but fewer had consumed a full standard drink of alcohol (sample 1 = 47%, sample 2 = 60%). Similar to previous studies (Agostinelli & Grube, 2005; Kelly et al., 2011), the present study distinguished between those students who had never consumed or only tasted alcohol, from those who had consumed at least a full drink of alcohol. To distinguish between adolescents who had consumed a full standard drink, and those who had not, the lifetime drinking item score was dichotomized (0 = *have not consumed a full standard drink in their lifetime*; 1 = *have consumed a full standard drink in their lifetime*). A sizeable proportion of adolescents had engaged in 'heavy episodic drinking', consuming more than four standard drinks on a single occasion at least once in the past three months. For both

samples, those that had consumed four or more standard drinks in the past 3 months did so on average 1-3 times a month, and consumed on average 4-6 drinks.

Structure of the UDDS

For both samples the mean and standard deviation of item responses were first examined to ensure there was variability for each item. For both scales, the mean item response ranged from 1.66 (0.86) to 3.74 (SD = 1.23) with an average mean of 2.46 and average standard deviation of 1.10. Consequently, all items were included in subsequent factor analyses.

Exploratory Factor Analysis (Sample 1). To account for the ordinal nature of the variables, the program FACTOR (Lorenzo-Seva & Ferrando, 2006) was used to conduct an exploratory factor analysis with polychoric correlations. Non-zero correlations, a significant Barlett test and a Kaiser-Meyer-Olkin (KMO) statistic greater than .08 were used as indicators of the suitability of using the polychoric correlation matrix (Baglin, 2014). The correlation matrix for the UDDS items demonstrated adequacy with all correlations greater than 0.30 (Barlett statistic ($df = 153$) = 7027.50, $p < .001$ and KMO = .95).

The number of factors extracted was based on parallel analysis, using minimum rank factor analysis (PA-MRFA; Timmerman & Lorenzo-Seva, 2011). This method compares the amount of variance explained by the observed factors to the 95th percentile of common variance explained by random permuted data. If the observed variance exceeds the common variance of the random permuted data then the factor is retained. The exploratory factor analysis revealed that the first observed factor explained 57.2% of the variance in UDDS, compared to 12.7% of the common variance from the 95th percentile of the random permuted data. The second observed factor variance did not exceed the random permuted data (8.3% compared to 11.6%). Therefore, consistent with previous moral disengagement research (Bandura et al., 1996; Paciello et al., 2008), a single factor was retained, with an

Eigenvalue of 10.14, explaining 57.2% of the variance in the UDDS. Factor loadings for the scale are presented in Table 1. The UDDS had an alpha reliability of .94.

Confirmatory factor analysis (Sample 2). To confirm the single-factor structure of the UDDS, and its measurement and structural invariance across grade and gender, a confirmatory factor analysis was conducted on sample 2. As the UDDS items were measured on an ordinal scale, the analysis was conducted using the diagonal weighted least squares method in Lisrel 9.1. Browne and Cudeck's (1993) and Vanderberg and Lance's (2000) criterion was used to determine model fit (i.e. Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) values of .90 or greater, and a Root Mean Square Error of Approximation (RMSEA) value of .08 or less). Due to similarity in wording, the errors of items with similar wording were allowed to correlate (e.g. three item stems began with the same wording: "teenagers can't be blamed for drinking if ..."). It is necessary to allow the correlation of anticipated residuals, otherwise if this procedure is not followed it can result in a misleading interpretation of the model (Cole, Ciesla, & Steiger, 2007).

The model obtained satisfactory fit, $\chi^2(126, N = 636) = 409.11, p < .001$, CFI = .99, GFI = .99, RMSEA = .06. Measurement and structural invariance across grade and gender were separately examined. The fit indices of the unconstrained models demonstrated configural invariance across gender and grade, $\chi^2(254, N = 636) = 515.73, p < .001$, CFI = .99, GFI = .99, RMSEA = .06; $\chi^2(254, N = 636) = 518.64, p < .001$, CFI = .99, GFI = .99, RMSEA = .07. When the constrained models were compared to the unconstrained model, a $\Delta\text{CFI} < .01$ was used to determine measurement and structural invariance (Cheung & Rensvold, 2002). When factor loadings, $\Delta\chi^2(17) = 30.14, p = .03$, $\Delta\text{CFI} = .001$; $\Delta\chi^2(17) = 34.12, p = .008$, $\Delta\text{CFI} = .001$, and structural components of the models, $\Delta\chi^2(18) = 33.57, p = .014$, $\Delta\text{CFI} = .002$; $\Delta\chi^2(18) = 27.46, p = .071$, $\Delta\text{CFI} = .001$, were constrained there was no

significant difference in model fit. Therefore, measurement and structural invariance of the model across grade and gender was established.

UDDS Effects by Drinker status, Grade and Gender

A 2(gender: male, female) x 2(grade: 9, 11) x 2(drinker status: non-drinker, drinker) x 2(Sample: 1, 2) analysis of variance (ANOVA) was conducted using the general linear modeling (GLM) procedure with gender, grade, drinker status and sample as between-subject factors and the UDDS total score as the dependent variable. The analysis yielded significant main effects for gender, $F(1, 1215) = 8.45$, $p = .004$, partial $\eta^2 = .01$, grade, $F(1, 1215) = 22.58$, $p < .001$, partial $\eta^2 = .02$, and drinker status, $F(1, 1215) = 404.62$, $p < .001$, partial $\eta^2 = .25$. Males ($M = 44.67$; $SD = 21.79$) scored higher on the UDDS than did females ($M = 42.37$; $SD = 16.94$), Grade 9 students ($M = 45.40$; $SD = 16.49$) scored higher on the UDDS than did students in Grade 11 ($M = 41.64$; $SD = 22.13$), and drinkers ($M = 51.48$; $SD = 16.24$) scored higher on the UDDS than did non-drinkers ($M = 35.56$; $SD = 22.31$). There was no significant difference between the two samples on their UDDS scores, $F(1, 1215) = 1.44$, $p = .231$, partial $\eta^2 = .00$.

UDDS

The bivariate correlation between the UDDS and the general moral disengagement scale revealed a strong positive relationship, $r = .70$. To test whether the UDDS was associated with underage drinking and heavy episodic drinking, over and above the general moral disengagement scale, two hierarchical regression analyses were conducted (see Table 2). In each regression, gender, grade and school were entered first as control variables, the general moral disengagement scale was entered second, and the UDDS was entered last. As seen in Table 2, the UDDS was more strongly associated than the general moral disengagement scale with the adolescents' engagement in underage drinking and underage

drinkers' level of heavy episodic drinking. Therefore, the UDDS was used as the measure of disengagement in all further analyses.

Moderated Mediation

Simple mediation. For each set of analyses Baron and Kenny's (1986) mediational process was followed. First underage drinking and heavy episodic drinking (i.e. outcome variable) were regressed on personal standards (i.e. independent variable). Next anticipatory guilt (i.e. mediator) was regressed on personal standards. Finally, underage drinking and heavy episodic drinking were regressed on personal standards while controlling for anticipatory guilt. The first set of mediational analyses were conducted on the total sample ($N = 636$) with underage drinking as the outcome variable. The second set of analyses were conducted on the drinker sub-sample ($n=384$) with heavy episodic drinking as the outcome variable. Grade, gender and school were included as control variables in all analyses.

As shown in Figure 2, personal standards were significantly associated with engagement in underage drinking (path c in Figure 2), and level of heavy episodic drinking, $\beta = -.47, p < .001$. Personal standards were also significantly associated with anticipatory guilt (path a in Figure 2). When personal standards were regressed on underage drinking/heavy episodic drinking while controlling for anticipatory guilt, anticipatory guilt (path b in Figure 2) and personally standards, (path c' in Figure 2), were significantly associated with engagement in underage drinking and drinkers'. However, the strength of the association between personal standards and underage drinking/heavy episodic drinking was reduced, indicating possible partial mediation (Baron & Kenny, 1986).

To examine the existence of partial mediation, the significance of the indirect effect of personal standards on underage drinking/heavy episodic drinking through anticipatory guilt was tested using Preacher and Hayes' (2004, 2008) nonparametric bootstrapping method¹. Bootstrapping was used with 5000 resamples and 95% bias corrected confidence interval

(CI). An indirect effect was deemed significant when the bootstrapping confidence interval did not contain zero (Hayes, 2009). For underage drinking, results yielded a point estimate of $-.08$ and a 95% CI between $-.10$ and $-.05$, indicating a significant indirect effect of personal standards on engagement in underage drinking, through anticipatory guilt. For heavy episodic drinking, results yielded a point estimate of $-.002$ and a 95% CI between $-.002$ and $-.001$, indicating a significant indirect effect of personal standards on drinkers' level of heavy episodic drinking, through anticipatory guilt.

Moderated mediation analysis. The simple mediation analysis indicated a partial mediation between personal standards, anticipatory guilt and underage drinking/heavy episodic drinking. To examine whether the UDDS moderated this relationship a moderated mediation model was tested using Hayes' (2012) PROCESS script, model 7, with 5000 bootstraps and a 95% bias corrected CI. Point estimates of the indirect effect of personal standards on underage drinking/heavy episodic drinking through anticipatory guilt were taken at low ($-1SD$), moderate (mean) and high ($+1SD$) levels of UDDS. Results indicated that the indirect effect was significant at all levels of UDDS, however, the strength of the relationship varied between low levels of UDDS, mean levels of UDDS and high levels of UDDS with the effect approaching zero as UDDS increased (see Table 3). These results indicate that more negative judgments about underage drinking (high personal standards) were related to low anticipatory guilt which was associated with reduced odds of drinking and, for underage drinkers, low levels of heavy episodic drinking. It further indicates that this indirect effect was weaker at high levels on the UDDS.

Discussion

The current study was the first to develop a moral disengagement scale specific to underage drinking. Consistent with other moral disengagement scales, the UDDS was representative of different disengagement mechanisms yet formed a single latent factor

(Bandura et al., 1996; Paciello et al., 2008). This single factor model was evident in both exploratory and confirmatory factor analyses. As expected, drinkers had higher mean scores on the UDDS than did non-drinkers. Also, consistent with the previous literature examining moral disengagement in the context of delinquency and aggression, males and younger students scored higher on underage drinking disengagement than did females and older students (Bandura et al., 2001; Lucidi et al., 2008; Paciello et al., 2008).

Although the UDDS was highly correlated with a general measure of moral disengagement, it was more strongly associated, than a general measure of moral disengagement, with adolescents' engagement in underage drinking and underage drinkers' levels of heavy episodic drinking. These results suggest that disengagement items specifically relating to underage drinking, not to a range of transgressive behaviors, better capture the relationship between moral disengagement and underage drinking. Such findings are consistent with previous research using behavior specific moral disengagement scales (Boardly & Kavussanu, 2007; Gini et al., 2013) and emphasize the importance of considering context when assessing moral disengagement.

This study was also the first to examine moral disengagement as part of Bandura's (1986) model of self-regulation within an underage drinking context. In examining the relationship between personal standards, anticipatory guilt and underage drinking disengagement, a moderated mediation model was utilized. The hypothesized indirect relationship of personal standards on engagement in underage drinking, and drinkers' levels of heavy episodic drinking, through anticipatory guilt was partially supported. Personal standards were positively related to engagement in underage drinking and heavy episodic drinking, both directly and indirectly through anticipatory guilt. These findings support Bandura's (1986) self-regulatory theory, indicating that adolescents who negatively judged underage drinking reported more anticipation of guilt, and more anticipation of guilt was

associated with lower engagement in underage drinking and lower levels of heavy episodic drinking. A possible reason for the partial mediation findings may be that the only negative self-evaluative reaction assessed in the present study was anticipatory guilt. Other self-evaluative reactions, such as anticipatory self-directed anger or sadness (Krettenauer & Johnston, 2011), may also mediate the relationship between personal standards and underage drinking, and could be explored in future research.

As expected, the indirect effect of personal standards on underage drinking, and heavy episodic drinking, through anticipatory guilt was weakest for adolescents with high UDDS scores. Consistent with Bandura's (1986) model of self-regulation, these findings highlight that self-regulatory systems do not operate as fixed regulators of behavior. Even if adolescents held negative judgments about underage drinking, those who highly endorsed underage drinking disengagement strategies, were less likely to anticipate guilt and were at an increased risk of drinking underage or, for adolescents already drinking, of engaging in heavy episodic drinking.

These findings have important implications for interventions aimed at delaying the age at which adolescents first consume alcohol, and at reducing the harms experienced by those adolescents who do drink. As suggested in previous research, a way to deter, delay or reduce alcohol consumption among adolescents may be to foster the development of personal standards that they should not drink underage (Amonini & Donovan, 2006; Abide et al., 2001; Reyna et al., 2013). For adolescents to develop such standards, it is crucial for underage drinking laws to be perceived as legitimate by adolescents (Amonini & Donovan, 2006), and as being reinforced and reflected in the norms of the wider community (Lipperman-Kreda, Grube, & Paschall, 2010). However, the current research supports Bandura's self-regulatory model (Bandura, 1986), highlighting that adolescents' belief that

they should not drink underage will not automatically deter them from drinking, or if they do drink, minimize their level of engagement in heavy episodic drinking.

The negative self-evaluative reactions that individuals apply to themselves are critical for behavioral self-regulation (Quiles et al., 2001). In line with Bandura's self-regulatory model (Bandura, 1986), the findings from the current study suggest that if adolescents excuse or justify their underage drinking, through disengagement strategies, they are less likely to adhere to their personal standards as they experience less anticipatory guilt when contemplating drinking underage. Therefore, it is important to support adolescents in the process of self-regulating their underage drinking. Future intervention programs may benefit from specifically targeting the disengagement strategies adolescents employ to justify their drinking. To achieve this, factors that may influence adolescents' underage drinking disengagement, such as reduced personal responsibility, could be more extensively examined. Additionally, ways in which justifications or excuses for drinking underage can be identified and challenged could also be explored.

It is necessary to note that the present study was cross-sectional, therefore, although the analyses were conducted based on theoretically tested models (Bandura et al., 1996), the results are limited to temporal associations and causal statements cannot be made. Future longitudinal testing should confirm the casual relationship between personal standards, guilt and underage drinking at different levels of underage drinking disengagement. A further limitation of this study was that self-report measures were employed. It is possible that students' responses were influenced by social desirability. However, participants were assured their responses were anonymous and confidential. Such assurance has been found to increase the accuracy of self-reported response in studies of substance use (Dolcini, Adler, & Ginsberg, 1996; Hanson, Malotte, & Fielding, 1985). Furthermore, some associations may be stronger due to shared method variance. Future research should seek to replicate these

findings using multiple forms of assessment of adolescent alcohol use; however, the difficulty of achieving this with an adolescent sample is that there are limited alternatives to self-report assessment. Prior research has found poor to moderate correlations between parent and adolescent substance use reports (McGillicuddy, Rychtarik, Morsheimer, & Burke-Storer, 2007), which questions the validity of parent report of adolescent alcohol use. Similarly, adolescents have been found to over-estimate the alcohol use of peers (Barkin, Smith & DuRant, 2002; Segrist, Corcoran, Jordon-Fleming, & Rose, 2007), which questions the validity of peer report measures.

Despite these limitations, the present study had several strengths. It was the first study to create a moral disengagement scale specific to underage drinking. Such a scale can be used in prevention and intervention programs to target those students who are at an increased risk of underage drinking and engaging in heavy episodic drinking. Another major strength of the current study was that it adds to the growing body of research on moral disengagement, highlighting the importance of not only examining self-regulatory processes, such as personal standards and negative self-evaluations, but also how these processes may be disengaged. The current research emphasizes adolescents' capacity to self-regulate their underage drinking behavior, whilst also acknowledging that such self-regulation is not automatic. It highlights that intervention programs aiming to prevent underage drinking, or to minimize the harms experienced by underage drinkers, may benefit from specifically targeting adolescents' propensity to endorse underage drinking disengagement strategies.

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Footnote

¹ Bootstrapping is preferred over the product of coefficients (ab or $c - c'$) Sobel test because it is not reliant on sample size, it maintains reasonable control of the Type 1 error rate and does not rely on a normal distribution of ab , which is often positively skewed (Preacher & Hayes, 2004; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Bootstrapping randomly generates a large number of samples (e.g. 5000) from the existing data, and computes an indirect effect (ab) in each sample (Preacher & Hayes, 2004). This random resampling is then used to generate confidence intervals for the indirect effect. The indirect effect is deemed significant when the bootstrapping confidence interval does not contain zero (Hayes, 2009).

Table 1.

Factor loadings for the UDDS.

Item	EFA	CFA
1. It's okay for teenagers to use alcohol if it helps them to become more confident at parties	.82	.83
2. Drinking alcohol is just a way to have fun	.80	.83
3. Getting drunk is okay because it is not as bad stealing or hurting other people	.76	.84
4. If adults leave alcohol lying around it is their fault if teenagers drink	.82	.68
5. Teenagers can't be blamed for drinking if their family members are drinking	.56	.59
6. A couple of drinks never hurt anybody	.54	.77
7. It's okay for teenagers to use alcohol if it helps them to relax	.62	.81
8. Drinking is cool	.85	.81
9. Drinking alcohol is okay because it's not as bad as using illegal drugs	.78	.80
10. If parents don't stop drinking at a party, teenagers can't be blamed for drinking	.83	.67
11. Teenagers can't be blamed for drinking if their friends are drinking	.83	.77
12. There is no reason to punish teenagers for drinking, after all it doesn't hurt anyone	.51	.80
13. It's okay for teenagers to drink alcohol if it helps them to deal with their problems	.76	.79
14. Drinking alcohol is a "confidence boost"	.77	.75
15. Only drinking on weekends is okay because it's not as bad as drinking every day	.89	.79
16. Teenagers can't be blamed for drinking if their family members encourage them to do it	.56	.48
17. If everyone at a party is drinking it is unfair to blame one kid for drinking	.61	.49
18. Getting drunk doesn't really have any negative long term effects	.70	.72

Note. EFA = factor loadings for exploratory factor analysis; CFA = factor loadings for confirmatory factor analysis.

The following items correspond to the various mechanisms of moral disengagement, *Justification*: 1, 7, 13. *Euphemistic language*: 2, 8, 14. *Advantageous comparison*: 3, 9, 15. *Displacement of responsibility*: 4, 10, 16. *Diffusion of responsibility*: 5, 11, 17. *Distorting consequences*: 6, 12, 18.

Table 2.

Hierarchical regressions of the UDDS on underage drinking and heavy episodic drinking, controlling for general moral disengagement.

	Underage drinking ^a (N=636)			Heavy Episodic Drinking ^b (n=384)	
	ΔR^2	OR	95%CI	ΔR^2	β
Step 1	.22***			.09***	
Grade		4.84***	3.17-7.37		.21***
Gender		0.48***	0.33-0.71		-.16**
Step 2	.14***			.13***	
Grade		8.97***	5.51-14.62		.36***
Gender		0.77	0.50-1.18		-.05
MD		1.06***	1.04-1.07		.40***
Step 3	.14***			.06***	
Grade		8.88***	5.20-15.16		.36***
Gender		0.69	0.42-1.10		-.05
MD		1.00	0.98-1.02		.18**
UDDS		1.12***	1.09-1.15		.34***

Note. The underage drinking regression is logistic regression odds ratio with Nagelkerke R^2 ; heavy episodic drinking regressions are standardized OLS regression coefficients with OLS R^2 . Three dummy variables coding school were entered in the Step 1 of all models but their coefficients are not reported here. a = (0=never consumed full standard drinking, 1 = have consumed full standard drink). b = log10 transformed; results for drinkers only.

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3.

Conditional indirect effect of personal standards on underage drinking and heavy episodic drinking through guilt at levels of UDDS.

	Underage drinking ^a (N=636)		Heavy Episodic Drinking (n=384)	
	Point Estimate (SE)	95% Bias-corrected bootstrap confidence interval	Point Estimate (SE)	95% Bias-corrected bootstrap confidence interval
Low UDDS	-.0862 (.0158)	-.1178 to -.0565	-.0020 (.0004)	-.0028 to -.0013
Mean UDDS	-.0633 (.0113)	-.0865 to -.0423	-.0013 (.0003)	-.0019 to -.0009
High UDDS	-.0404 (.0080)	-.0579 to -.0264	-.0002 (.0002)	-.0012 to -.0003

Note. 5000 bootstrap samples. a = (0=*never consumed full standard drinking*, 1 = *have consumed full standard drink*). b = log10 transformed; results for drinkers only.

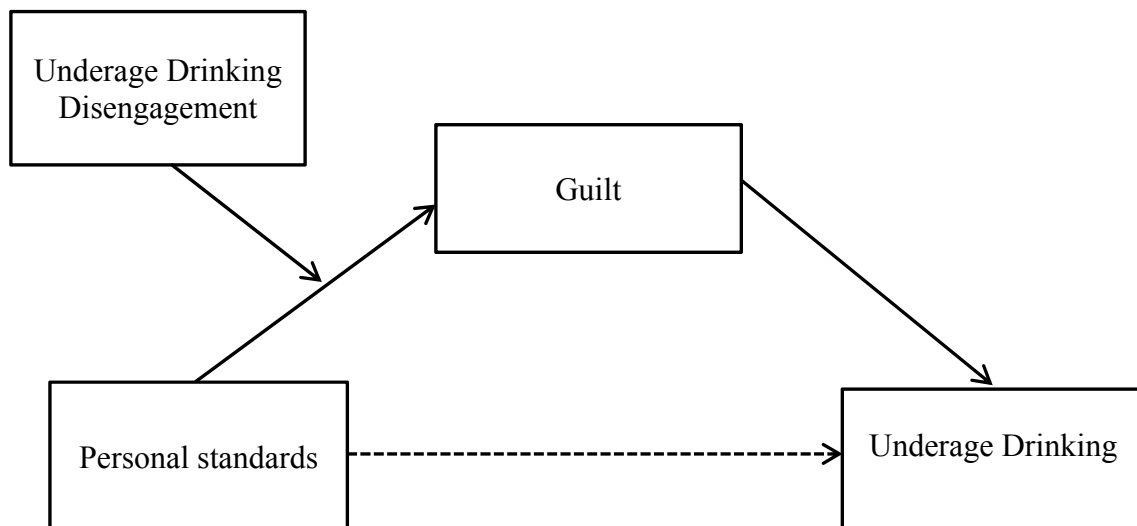


Figure 1. The conceptual moderated mediation model of personal standards to guilt to underage drinking as moderated by UDDS.

MORAL DISENGAGEMENT AND UNDERAGE DRINKING

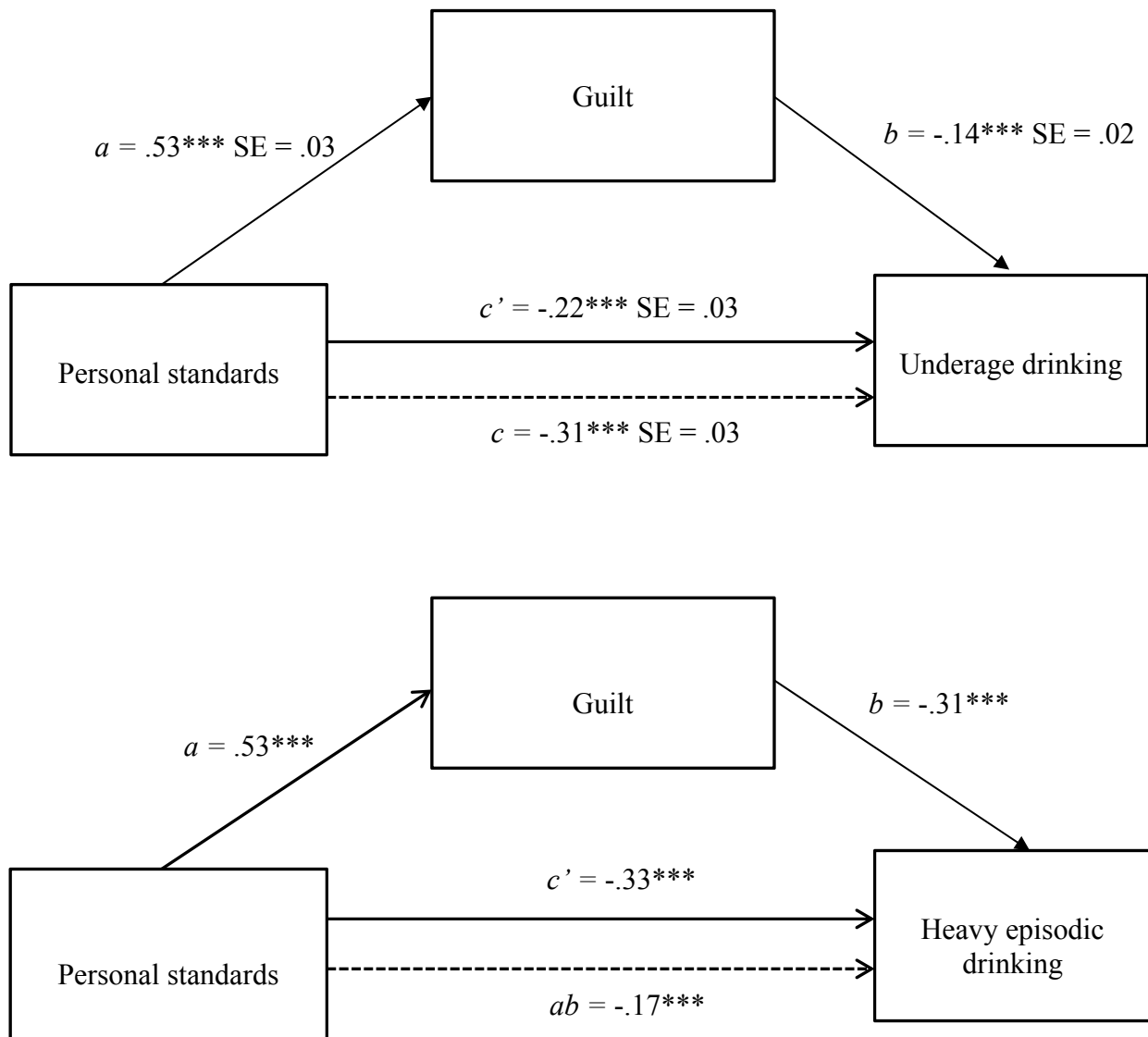


Figure 2. Path coefficients of simple mediational analysis on underage drinking (top: $N=636$) and heavy episodic drinking (bottom: $n=384$).

Note. Grade, gender and the three dummy coded school variables were included as control variables and are not depicted here. For the underage drinking mediation a is an unstandardized OLS regression coefficient, and b , c and c' represent unstandardized logistic regression coefficients. The dotted line represents path c (i.e. effect of personal standards on underage drinking when guilt is not included in the model (the indirect effect could not be calculated due to difference in scaling of the indirect and total effects (MacKinnon, Lockwood, Brown, Wang, & Hoffman, 2007)). For heavy episodic drinking a , b and c' represent OLS regression standardized β coefficients. The dotted line represents path ab (i.e. the indirect effect of personal standards on alcohol harm through guilt).

*** $p < .0005$