

Running head: SOCIAL IDENTITY AND ALCOHOL

Explaining reactions to normative information about alcohol consumption: A test of an  
extended social identity model

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### Abstract

**Background:** To test the role of group identification and the perceived importance of alcohol consumption to a group identity in shaping reactions to normative information about alcohol consumption.

**Methods:** The study had a 2 (behaviour: identity-defining/alcohol vs. non-identity defining/caffeine) X 2 (norm: low vs. heavy consumption) between-subjects factorial design. Group identification and personal attitudes towards alcohol/caffeine consumption were included as measured predictors. Participants were 83 undergraduate students (44 female, 38 male, one unspecified) at a University in Scotland. Predictor and outcome variables included questionnaire measures of group (student) identification, personal attitudes to alcohol/caffeine consumption, the perceived importance of alcohol/caffeine consumption to group identity, and behavioral intentions to consume alcohol/caffeine.

**Results:** Personal attitude and group identification moderated the impact of norm information on consumption intentions, but only for alcohol consumption, and not caffeine consumption. For alcohol, norm information did affect intended consumption ( $ps \leq .034$ ), with the crucial exception of high identifiers who had favourable personal attitudes towards alcohol consumption. Instead, these individuals resist norm information ( $ps = .458$  and  $.174$ ), showing no decrease in intentions in the face of norm information that emphasised relatively 'low' levels of consumption.

**Conclusions:** The impact of norm information on alcohol consumption intentions depends on group-based factors such as group identification and the perceived importance of alcohol to a group identity. When both of these factors are high, and an individual also personally favours the behaviour, the potential for norm-based interventions to fail is increased.

## A test of an extended social identity model of attitudes, norms and alcohol consumption

The role of norms in influencing alcohol consumption has received increasing recognition (Beck & Treiman, 1996; Borsari & Carey, 2001, 2003; Cooke, Sniehotta, & Schuz, 2007; Johnston & White, 2003; Kuther & Higgins-D'Alessandro, 2003; Livingstone, Young, & Manstead, 2011; Neighbors, Lee, Lewis, Fossos, & Larimer, 2007; Yanovitzky & Stryker, 2001), and has formed the basis for interventions that seek to manage alcohol consumption among target populations (French & Cook, 2012; Perkins, 2002; Perkins, Haines, & Rice, 2005; Toomey & Wagenaar, 2002). These interventions are based on the premise that one driver of heavy alcohol consumption amongst groups such as university students is their exaggerated perceptions of what other students actually drink (Kypri & Langley, 2003; Perkins, 2002; Perkins et al., 2005; Thombs, Wolcott, & Farkash, 1997). Consequently, norm-based interventions have focused on providing information on actual levels of alcohol consumption (often much lower than students' perceptions), which calibrates the norm and subsequent drinking (Mattern & Neighbors, 2004; Perkins, 2002; Perkins et al., 2005; Turner, Perkins, & Bauerle, 2008). However, the results of such interventions can be rather mixed (Thombs, Dotterer, Olds, Sharp, & Raub, 2004; Toomey & Wagenaar, 2002; Wechsler, Nelson, Lee, Seibring, Lewis, & Keeling, 2003; Werch, Pappas, Carlson, DiClemente, Chally, Sinder, 2000), some explanations for which include the heterogeneity of target groups (Wechsler et al., 2003), and potential negative effects contained within norm-based information (Werch et al., 2000). Indeed, there is some evidence that normative information holds the potential for 'boomerang' or backfire effects under certain conditions (Livingstone et al., 2011). The aim of the present paper is examine more closely the conditions under which norm information will or will not influence recipients in the intended direction.

Several important features of the link between norms and behavior from a social psychological perspective are worth highlighting. First, norms are more than an aggregate of external social pressures (cf. Ajzen, 1985); rather, they represent an internalized set of standards, values and behavioral prescriptions (Rimal & Real, 2005; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007; Terry & Hogg, 1996, 2000). These are also tied to specific social identities (Tajfel & Turner, 1979), which may become salient in different social contexts. For example, norms regarding alcohol consumption may be different if one defines oneself as a student, compared to when one defines oneself in terms of national identity, or sports team identity. The key process here is self-categorization: the context-dependent act of defining oneself in terms of a specific group membership (Turner, Hogg, Oakes, Reicher, Wetherell, 1987). This results in a process of self-stereotyping, whereby one takes on the perceived norms, values and standards of the group in question, providing a basis from which social influence takes place (Smith & Louis, 2009; see also Larimer et al., 2009, and Neighbors et al., 2010, the specificity of referent group norms influences alcohol consumption).

The above conceptualization of norms and their link to social identities has important implications for understanding when and how norms influence behavior. Drawing on social identity theory (Tajfel & Turner, 1979) and self-categorization theory (Turner et al., 1987), influential research by Terry and Hogg (1996, 2000) suggests two such implications. First, the effect of group norms of behavior will be greater when identification with the group is high. Put another way, not all group members *identify* with the group to the same extent, and it is those who identify strongly with the group who are motivated to adhere to the ingroup's norms. This is echoed in research showing that greater identification with specific referent groups increases the influence of those groups' norms on alcohol consumption (Larimer et al., 2009; Neighbours et al., 2010; Reed, Lange, Ketchie, & Clapp, 2007). Second, one's

personal attitude towards a behavior will be more predictive of intentions to perform the behavior when that behavior is consistent with a salient ingroup norm (Smith & Louis, 2009; Terry, Hogg, & White, 1999; White, Hogg, & Terry, 2002; White, Smith, Terry, Greenslade, & McKimmie, 2009). For example, a group norm relating to the use of sun protection was found to be more predictive of intentions to use sun protection amongst participants who identified strongly with their (student) ingroup (Terry & Hogg, 1996).

Notwithstanding the contribution of their model to understanding the role of norms in shaping health behaviors, there is reason to believe that for some groups at least, the dynamics around the specific behavior of alcohol consumption may be somewhat different to those proposed by Terry and Hogg. The issue here centers on how *important* a behavior such as alcohol consumption is seen as being for an ingroup identity (Smith, Terry, Crosier, & Duck, 2005). Unlike many other health behaviors – such as sun protection or condom use – alcohol consumption is commonly stereotypically associated with particular social categories (e.g., amongst university students), both by members and non-members of the category (DeSimone, 2007, 2008; Norman, 2011; Rabow & Duncan-Schill, 1994; Weitzman, Nelson, Wechsler, 2003).

We suggest that the relative importance of alcohol consumption means that it may represent something of a special case when it comes to the influence of norms, group identification and attitudes. For a behavior that is seen as relatively defining of or important to an ingroup identity, norms represent subjectively important features of the ingroup identity (Terry & Hogg, 1996). Normative information that *contradicts* these notions – for example, information that ingroup members in fact drink less than many believe – may be seen as undermining a subjectively important aspect of ingroup identity. This is especially so for group members who identify highly with the group (and therefore motivated to maintain its image and norms), and who have a positive attitude to alcohol consumption. An important

implication is that high identifiers with a positive attitude to heavy alcohol consumption are actually likely to *resist* normative information which suggests that alcohol consumption in the ingroup is actually quite low, particularly when it comes to their own reported intentions to consume alcohol. This contrasts with the conventional view that high identifiers are *most* likely to act in accordance with normative information, and suggests a specific mechanism through which norm-based interventions may lead some group members to moderate their alcohol consumption, but leads others to maintain their own (strong) intentions to consume alcohol, or even to increase it. Evidence of such an effect was found by Livingstone et al. (2011). After manipulating the ingroup drinking norm (moderate vs. heavy), they found that participants with a positive attitude to heavy drinking and who identified strongly with the ingroup reported *stronger* intentions to drink heavily when the ingroup had a moderate, rather than a heavy drinking norm, indicating resistance to the normative information.

Our aim in the present study was to replicate and extend this earlier work in several ways. For one thing, the perceived importance of alcohol to ingroup identity was only assessed in a separate pilot study by Livingstone et al. (2011), and not in the context of their main study. Moreover, the logic of their hypotheses implies that while the predicted effects will occur only for a behavior (such as alcohol consumption) that is perceived to be important to an ingroup identity. However, there was no direct comparison in Livingstone et al's (2011) study with a health-related behavior that is *not* perceived to be important to an ingroup identity. We address these issues in the present study by manipulating the descriptive norm of alcohol consumption presented to a sample of undergraduate students and examining its effect on intentions to consume alcohol, moderated by ingroup identification and personal attitudes towards alcohol consumption. We also sought to directly test the role of the relative perceived importance of alcohol to ingroup identity by introducing a comparison behavior (caffeine consumption) that is not perceived as important to ingroup identity. Caffeine

consumption was selected as a comparison behavior because it is a drug that is typically (but not exclusively) imbibed in liquid form in social situations, at least amongst the target population of this study. If the predicted effects of norms, identification and attitudes on behavioral intentions is indeed dependent on alcohol being perceived as relatively defining of ingroup identity, then the effects should be evident only for alcohol consumption, and not for caffeine consumption.

To summarize, we predicted that (1) normative information would affect alcohol consumption intentions, but (2) that this would be moderated by identification, personal attitude, and the perceived importance of the behavior to ingroup identity. Specifically, we expected that the effect of normative information would be *reduced* when (1) identification with the ingroup was high, (2) participants personally favored heavy alcohol consumption, and (3) only for the relatively identity-defining behavior of alcohol consumption, and not for the less identity-defining behavior of caffeine consumption. We tested these predictions using two different indicators of behavioral intentions. The first involved the amount of alcohol in UK units that participants intended to consume, while the second addressed the frequency with which participants intended to consume more than 10 UK units of alcohol in a session. This is one of the thresholds commonly used in the UK to define so-called ‘binge’ drinking (see Berridge, Thom, & Herring, 2007), and is roughly equivalent to the ‘5/4’ measure of ‘binge’ drinking advanced by Wechsler and colleagues (e.g., Wechsler & Austin, 1998).

## **Method**

### **Participants**

Eighty-three undergraduate students (44 female, 38 male, and one unspecified) at a Scottish university were recruited in public places on the university campus. The sample had a mean age of 21.28 years ( $SD = 3.95$ ), and ages ranged from 18 years to 48 years. The minimum age for participation was the UK legal minimum of 18 years.

## Design

The study had a 2 (behavior: identity-defining/alcohol vs. non-identity defining/caffeine) X 2 (norm: low vs. heavy consumption) between-subjects factorial design. Dependent measures included intentions to consume alcohol/caffeine, both in terms of the overall amount to be consumed over the following week, and in terms of the number of occasions on which 'heavy' consumption would occur.

## Materials and Procedure

After giving their informed consent to participate in the study, participants were presented with a questionnaire that contained all of the relevant materials. From the outset, it was clear to the participant which behavior (alcohol consumption or caffeine consumption) the questionnaire would address. Unless otherwise stated, responses were recorded on 7-point scales ranging from -3 (strongly disagree) to 3 (strongly agree).

**Pre-manipulation measures.** The first measures in the questionnaire constituted a six-item scale of ingroup identification ( $\alpha = .81$ ), based on the scales used by Doosje, Ellemers, and Spears (1995) and Leach, van Zomeren, Zebel, Vliek, Pennekamp, Doosje, et al. (2008). This included items such as 'I see myself as a University of \_\_\_\_ student', 'I have a lot in common with the average University of \_\_\_\_ student', and 'Being a University of \_\_\_\_ student is an important part of how I see myself'.

There followed a four-item scale of participants' personal attitude towards the behavior in question ( $\alpha = .93$ ), adapted from Livingstone et al. (2011). This was accompanied by a table containing information about the amount of alcohol (in UK units) or caffeine (in mg) contained in common drinks such as lager, wine and spirits (alcohol conditions) or coffee, tea, and cola (caffeine conditions), collated from official UK governmental standards (e.g., Lifestyle Statistics, Health and Social Care Information Centre, 2013). In the alcohol conditions, participants then responded to the statement 'Drinking more than 10 units of



alcohol in a day at least once over the next seven days would be...’ on four semantic differential items anchored with Abnormal-Normal, Unenjoyable-Enjoyable, Unusual-Usual, Unpleasant-Pleasant. The 7-point response scales ranged from -3 at the negatively-anchored end, to 3 at the positively-anchored end. In the caffeine conditions, participants responded on the same scales to the statement, ‘Drinking more than 350mg of caffeine in a day at least once over the next seven days would be...’. The level of caffeine consumption mentioned (350mg) was selected because it sits at the upper end of what has been identified as ‘safe’ caffeine consumption, and over which (> 400mg) adverse effects may become more apparent (Heckman, Weil, & de Meija, 2010).

All participants then completed a 7-item scale ( $\alpha = .83$ ) measuring the perceived importance of the behavior to ingroup identity (Livingstone et al., 2011). This was intended as a check of the assumption that alcohol would be perceived as more social identity-defining than caffeine. Items included statements such as ‘Consuming alcohol (caffeine) is an important part of being a University of \_\_\_\_ student’, and ‘Consuming alcohol (caffeine) has very little to do with the identity of University of \_\_\_\_\_ students’ (reverse scored).

**Norm information manipulation.** Participants were then presented with a graph purporting to show results of previous research into how much alcohol or caffeine was consumed by students at the ingroup university, in terms of units per student per night out (alcohol condition) or mg per student per day (caffeine condition). In the moderate norm condition, the graph indicated that the mean/median/modal amount consumed by students was 7.5 units of alcohol or 250mg of caffeine. In the heavy norm condition, the graph indicated that the mean/median/modal amount consumed by students was 15 units of alcohol or 500mg of caffeine. Each graph was followed by a sentence that summarized the data: “From Figure 1 it can be seen that University of \_\_\_\_ students drink on average 7.5 [15] units of alcohol on an evening of drinking”, or “From Figure 1 it can be seen that University of

\_\_\_\_\_ students drink on average 250mg [500mg] of caffeine in an average day”. This manipulation was later checked by an open-ended item that asked participants to indicate what they thought to be the mean number of units of alcohol or mg of caffeine consumed on an average night of drinking or an average day by their fellow university students.

**Behavioral intentions.** Intentions to drink alcohol/caffeine were measured using two scales. The first scale required participants to write down how *much* alcohol (in units) or caffeine (in mg) they intended to consume over the next seven days. In order to make these values comparable across behaviors, the data file was split by behavior and scores on this scale were standardized – that is, scores for alcohol and caffeine were standardized separately.

The second scale consisted of three items ( $\alpha = .93$ ) and measured how strongly participants intended to consume more than 10 units of alcohol in one session, or 350mg of caffeine in one day, at least once during the next seven days (e.g., ‘I intend to drink more than 10 units of alcohol [350mg of caffeine] in a day at least once over the next seven days’).

### **Analytic strategy**

For our main outcome measures relating to behavioral intentions, we had four predictors, two of which were manipulated (norm and behavior) and two of which were measured beforehand (identification and personal attitude). The analytic strategy therefore involved ANOVAs with all four predictors in a fully factorial model with all interaction terms. Unless otherwise stated, the analysis of each measure thus began with a 2 (behavior: alcohol vs. caffeine) X 2 (norm: moderate vs. heavy consumption) X ingroup identification (continuous, mean-centered) X attitude (continuous, mean-centered) ANOVA. Higher-order interactions were then decomposed to examine lower-order effects that directly test the specific predictions above. In these models, ingroup identification and attitude were entered as mean-centered continuous variables, and not as median split categorical variables. This strategy

helps to retain power by reducing the number of discrete conditions and retaining variance that would be lost by performing a median split. Simple effects of manipulated variables were calculated as simple main effects at specified levels ( $M \pm 1SD$ ) of the continuous variables. The values illustrated in Figures 1 and 2 are therefore predicted values rather than observed means.

## Results

Means and standard deviations for each outcome measure broken down by condition are reported in Table 1, while results of ANOVA analyses for the main dependent variables can be found in Table 2.

### Manipulation checks

An independent-samples *t*-test with behavior as the independent variable and perceived importance of the behavior as the dependent variable confirmed that alcohol ( $M = 0.16$ ,  $SD = 1.39$ ) was perceived as being more important to ingroup identity than caffeine ( $M = -1.14$ ,  $SD = 1.16$ ),  $t(81) = 3.48$ ,  $p < .001$ .

An ANOVA was conducted on the norm manipulation check. This revealed a significant main effect of the norm manipulation,  $F(1, 66) = 25.81$ ,  $p < .001$ ,  $\eta^2_p = .281$ . Confirming the effectiveness of the manipulation, consumption was perceived to be higher in the heavy condition ( $M = 0.46$ ,  $SD = 1.01$ ) than in the moderate condition ( $M = -0.51$ ,  $SD = 0.68$ ). No other effects were significant, aside from attitude, which positively predicted consumption estimates,  $F(1, 66) = 7.63$ ,  $p = .007$ ,  $\eta^2_p = .104$ .

### Intended consumption: Amount.

Several lower-order effects on the amount of alcohol/caffeine that participants intended to consume were qualified by a four-way interaction between all of the factors,  $F(1,$

67) = 5.34,  $p = .024$ ,  $\eta^2_p = .074$ <sup>1</sup>. This interaction is illustrated in Figure 1. Separate ANOVAs on each of the behaviors revealed that the three-way interaction between norm, identification and attitude was only significant for alcohol,  $F(1, 34) = 14.97$ ,  $p < .001$ ,  $\eta^2_p = .306$  ( $F < 1$  for caffeine).

**Alcohol.** Analysis of the simple main effects of norm in the alcohol conditions revealed that when identification was high ( $M + 1SD$ ), the effect of norm was only significant when heavy drinking attitude was negative ( $M - 1SD$ ),  $F(1, 67) = 5.32$ ,  $p = .024$ ,  $\eta^2_p = .074$  ( $F < 1$  when heavy drinking attitude was positive,  $M + 1SD$ ). Specifically, participants' intended alcohol consumption was greater in the heavy norm condition than in the moderate norm condition.

When identification was low ( $M - 1SD$ ), the effect of norm was only significant when heavy drinking attitude was positive ( $M + 1SD$ ),  $F(1, 67) = 9.63$ ,  $p = .003$ ,  $\eta^2_p = .126$ . Again, participants' intended alcohol consumption was greater in the heavy norm condition than in the moderate norm condition. The effect of norm information was in the opposite direction when heavy drinking attitude was negative ( $M - 1SD$ ), but not significantly so,  $F(1, 67) = 2.95$ ,  $p = .090$ ,  $\eta^2_p = .042$ .

**Caffeine.** The simple effect of norm was not significant in any combination of high/low identification and high/low attitude.

#### **Intended consumption: Frequency.**

A similar ANOVA on the intended frequency of heavy alcohol/caffeine consumption revealed several lower-order effects which were qualified by a significant three-way interaction between norm, identification and attitude,  $F(1, 67) = 5.41$ ,  $p = .023$ ,  $\eta^2_p = .075$ .

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<sup>1</sup>Analyses including participant sex as a covariate revealed that it had no independent effect, and that the four-way interaction remained significant. Further analyses including sex as a factor revealed no moderating effect of sex. Participant sex was thus excluded from the reported analyses

This interaction is illustrated in Figure 2. Although this was not significantly moderated by behavior ( $F < 1$ ), this three-way interaction was nevertheless only significant for alcohol,  $F(1, 34) = 4.85, p = .035, \eta^2_p = .125$ , and not for caffeine,  $F(1, 33) = 1.90, p = .177, \eta^2_p = .054$ .

**Alcohol.** Analysis of the simple main effects of norm in the alcohol conditions revealed that when identification was high ( $M + 1SD$ ), the effect of norm was significant when heavy drinking attitude was negative ( $M - 1SD$ ),  $F(1, 67) = 7.54, p = .008, \eta^2_p = .101$ , but not when heavy drinking attitude was positive ( $M + 1SD$ ),  $F(1, 67) = 1.89, p = .174, \eta^2_p = .027$ . When heavy drinking attitude was negative, participants' intended alcohol consumption was greater in the heavy norm condition than in the moderate norm condition.

When identification was low ( $M - 1SD$ ), the effect of norm was only significant when heavy drinking attitude was positive ( $M + 1SD$ ),  $F(1, 67) = 4.67, p = .034, \eta^2_p = .065$  ( $F < 1$  when heavy drinking attitude was negative; i.e.,  $M - 1SD$ ). Again, participants' intended alcohol consumption was greater in the heavy norm condition than in the moderate norm condition.

**Caffeine.** The simple effect of norm was not significant in any combination of high/low identification and high/low attitude.

### Discussion

The present study examined the conditions under which normative information about the alcohol or caffeine consumption of an ingroup leads to changes in intended consumption. The research sought to extend research on norm-based interventions to manage alcohol consumption (e.g., French & Cooke, 2012; Perkins, 2002; Perkins et al., 2005; Thombs et al., 1997, 2004; Toomey & Wagenaar, 2002; Wechsler et al., 2003; Werch et al., 2000) and social identity models of attitude-intention relations (Smith & Louis, 2009; Terry & Hogg, 1996, 2000) by taking into consideration the perceived importance of alcohol consumption to the ingroup identity in question – in other words, how group-defining alcohol consumption is

seen to be. Manipulation checks confirmed that alcohol consumption was significantly more ingroup-defining than caffeine consumption for the student sample. Our main prediction was that the interplay between norm information, personal attitude and group identification would be different depending on how identity-defining the behavior is. The role of identification has been highlighted in previous research as a moderator of the effect of specific referent group norms on consumption (e.g., Larimer et al., 2009; Neighbors et al., 2010), but its interplay with the perceived importance of the behavior in shaping responses to norm information has received less attention. The findings were consistent with predictions, in that the interaction between norm information, attitude and identification was only significant for alcohol consumption, and not caffeine consumption.

For alcohol, norm information did indeed affect intended consumption, with the crucial exception of high identifiers who had favorable personal attitudes towards alcohol consumption. Instead, these individuals resist norm information, showing no decrease in intentions in the face of norm information that emphasized relatively 'low' levels of consumption (cf. Terry & Hogg, 1996). This is consistent with previous research which suggests that high identifiers with a positive attitude to heavy alcohol consumption are liable to resist normative information which suggests that alcohol consumption in the ingroup is actually quite low, both in terms of their own intended consumption and in terms of social pressure placed on other group members (Livingstone et al., 2011).

The present research points the way towards a more precise understanding of why – and for whom – norm-based interventions succeed or fail (Thombs et al., 2004; Toomey & Wagenaar, 2002; Wechsler et al., 2003; Werch et al., 2000). While such interventions have the potential to be effective (e.g., Mattern & Neighbors, 2004; Perkins et al., 2005), the present findings highlight the importance of taking into account subjective identification with the group to which the norm relates, and the perceived importance of the behavior to the

identity of the group. When both of these factors are high, and an individual also personally favors the behavior, the potential for norm-based interventions to fail is increased because such interventions are likely to be perceived as undermining a subjectively important feature of an ingroup identity. In contrast, when some or all of these factors are low, then norm-based interventions are more likely to have the intended effect.

The flip-side of this is that individuals who do not have a favorable attitude towards alcohol, but who identify strongly with the ingroup and perceive alcohol to be an important aspect of an ingroup identity, are likely to be susceptible to increased levels of alcohol consumption if the prevailing norm favors heavy alcohol consumption. Although such individuals are not inclined towards heavy consumption at an individual level, their identification with a group that sees heavy consumption as important is a strong motivating factor. Norm-based interventions may well have a positive effect under such circumstances – as long as they successfully countervail other sources of normative information from fellow students.

### **Limitations and future research**

One potential limitation of the present study is the absence of a measure of typical alcohol consumption at the outset. Such a measure would have permitted tests of the extent to which the processes examined here operate amongst participants who do or do not already consume alcohol heavily, and of within-participant changes in intentions. Having said this, it is highly unlikely that baseline consumption levels represent an alternative explanation for any of the findings because of random allocation to the between-participants conditions. Even if in this instance there may have been a disproportionate number of heavy drinkers or teetotalers in one condition, it would not explain the conceptual consistency of the present findings with previous research using a similar paradigm (e.g., Livingstone et al., 2011). The chances of such a skewed distribution across conditions happening in exactly the same

manner across two studies are very small. Instead, the value of adding baseline measures of consumption in future research would be (1) as a potential moderator of effects, and (2) in allowing within-participant change to be assessed.

The present findings open up several other possibilities for future research. One such possibility is to examine the role of the processes highlighted here in shaping behavior as well as behavioral intentions. In the present study, the benefits of the direct manipulation of the normative information in terms of establishing causality were weighed against the ethical implications of examining the impact of these manipulations on actual alcohol consumption before an appropriate debrief had taken place. We therefore opted for a direct manipulation and measures of intentions in order to offer as convincing a test as possible of our hypothesized model. Further tests of this model with behavioral outcomes, and tested using other social identities, would help to provide a fuller understanding of how normative information influences alcohol consumption. Likewise, there is scope to further examine the processes of social influence implicated in analyses of the role of norms. As is evident in other contexts, norms perpetuate over time because they are enforced, and begin to change when they are challenged directly or indirectly (Stott, Adang, Livingstone, & Schreiber, 2007). Outstanding questions include whether and how the processes examined here – social identity, and the perceived importance of a behavior to social identity – shape the *enforcement* of norms of alcohol consumption on other group members, and potentially provide a means through which norms can be changed.

In terms of practical implications, the process that we see as underlying the present findings might also suggest a way of mitigating against any tendency to resist normative information in interventions. Our reasoning suggests that people who identify strongly with the group and who personally favor heavy alcohol consumption can experience norm-based interventions as threatening a subjectively-important aspect of their identity. It follows that



providing other information that *affirms* that identity on another dimension – for example, in terms of their moral standing (Leach, Ellemers, & Barreto, 2007) – should reduce feelings of identity threat. Similar processes have been observed in the context of intergroup relations research (e.g., Knowles, Lucas, Molden, Gardner, & Dean, 2010) and in research on health behaviors (e.g., Sherman, Nelson, & Steele, 2000). In other words, providing information about other, positive aspects of the ingroup identity may help to lessen resistance encountered by those who strongly identify with the group.

### **Conclusion**

The present research examined the role social psychological factors in shaping responses to normative information about alcohol consumption, focusing in particular on *identification* with a social group (university students in the present case), and the *perceived importance* of alcohol consumption to that social category. The findings provide insight into when and why normative information may influence alcohol consumption intentions in the intended direction, and when resistance to that information may be encountered. Most pertinently, normative information that emphasizes levels of consumption in a particular group is less likely to reduce consumption when people identify strongly with that group and see alcohol consumption as important to it. In highlighting the role of these social psychological factors, these findings also suggest the importance of taking such factors into account when designing and evaluating norm-based interventions targeting alcohol consumption.

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Table 1:

Means and standard deviations for outcome measures in each condition. Standard deviations are reported in parentheses.

	Alcohol		Caffeine	
	Low	High	Low	High
Intended consumption: Amount (unstandardized)	13.48 (12.88)	29.50 (15.79)	761.50 (684.28)	956.33 (1032.72)
Intended consumption: Amount (standardized)	-0.51 (0.78)	0.46 (0.96)	-0.11 (0.78)	0.11 (1.18)
Intended consumption: Frequency	-0.50 (2.14)	2.11 (1.17)	0.17 (1.82)	-0.56 (2.10)



Table 2:

ANOVA results for each outcome measure. Significant effects are reported in bold.

	<b>Intended consumption: Amount</b>	<b>Intended consumption: Frequency</b>
Behavior X norm X ingroup identification X attitude interaction	<b><math>F(1, 67) = 5.34, p = .024,</math> <math>\eta^2_p = .074</math></b>	$F < 1$
Norm X ingroup identification X attitude interaction for <b>alcohol</b>	<b><math>F(1, 34) = 14.97, p &lt; .001,</math> <math>\eta^2_p = .306</math></b>	<b><math>F(1, 34) = 4.85, p = .035,</math> <math>\eta^2_p = .125</math></b>
Norm X ingroup identification X attitude interaction for <b>caffeine</b>	$F < 1$	$F(1, 33) = 1.90, p = .177,$ $\eta^2_p = .054$
Simple effect of norm for alcohol when identification = high ( $M +$ $1SD$ ) and attitude = negative ( $M -$ $1SD$ )	<b><math>F(1, 67) = 5.32, p = .024,</math> <math>\eta^2_p = .074</math></b>	<b><math>F(1, 67) = 7.54, p = .008,</math> <math>\eta^2_p = .101</math></b>
Simple effect of norm for alcohol when identification = high ( $M +$ $1SD$ ) and attitude = positive ( $M +$ $1SD$ )	$F < 1$	$F(1, 67) = 1.89, p = .174,$ $\eta^2_p = .027$
Simple effect of norm for alcohol when identification = low ( $M -$ $1SD$ ) and attitude = negative ( $M -$ $1SD$ )	$F(1, 67) = 2.95, p = .090,$ $\eta^2_p = .042$	$F < 1$
Simple effect of norm for alcohol when identification = low ( $M -$ $1SD$ ) and attitude = positive ( $M +$ $1SD$ )	<b><math>F(1, 67) = 9.63, p = .003,</math> <math>\eta^2_p = .126</math></b>	<b><math>F(1, 67) = 4.67, p = .034,</math> <math>\eta^2_p = .065</math></b>

**Figure captions**

*Figure 1.* Interaction between norm information, attitude, identification and health behavior on intentions to consume alcohol (upper panels) and caffeine (lower panels). *P* values relate to the simple main effect of norm information.

*Figure 2.* Interaction between normative information, attitude, identification and health behavior on intended frequency of heavy consumption of alcohol (upper panels) and caffeine (lower panels). *P* values relate to the simple main effect of norm information.

Figure 1.

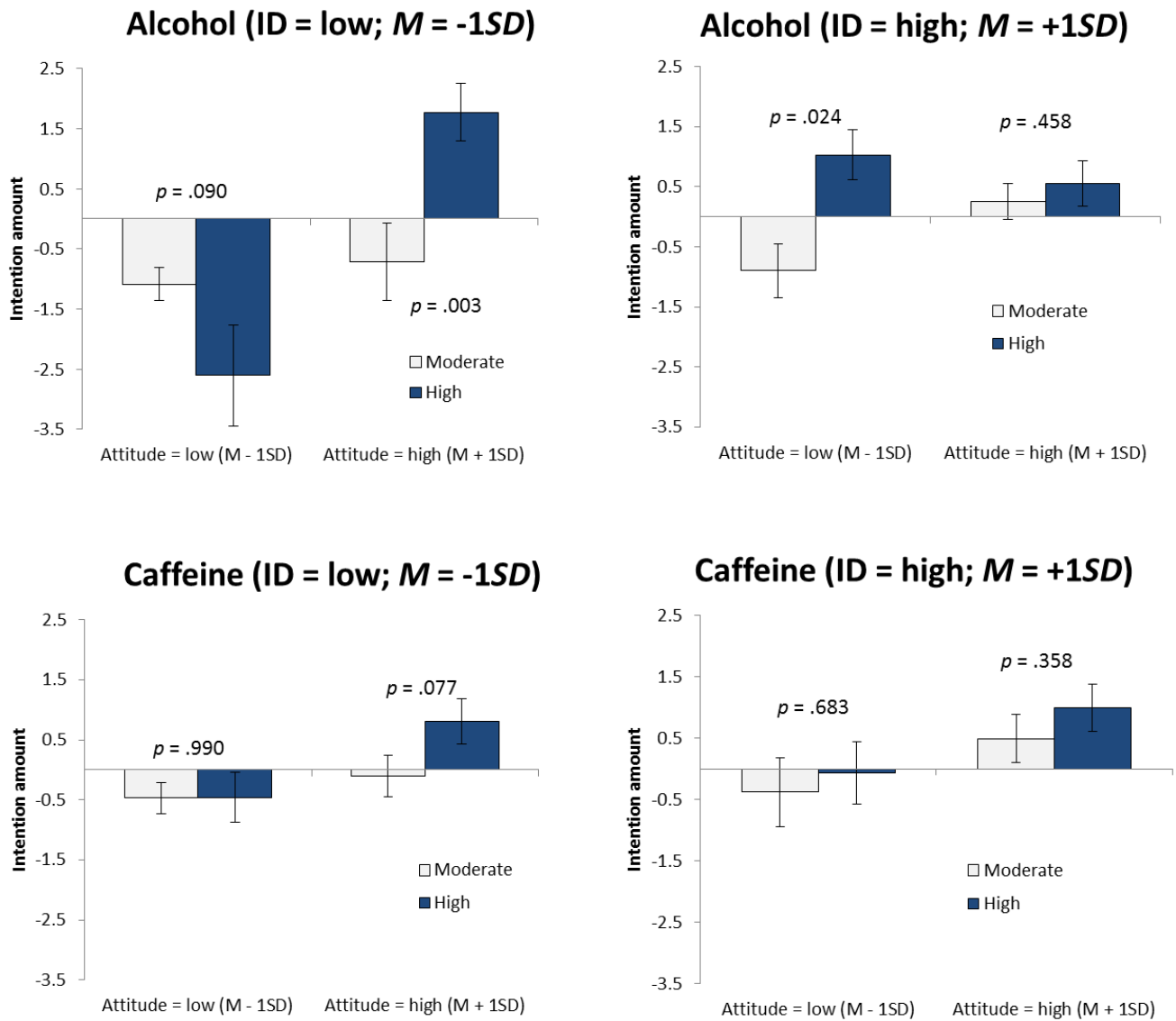


Figure 2.

