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Running head: **Future-oriented emotions**

Future-oriented emotions in the prediction of binge-drinking intention and expectation as self-reported by university student drinkers.

Abstract

The Theory of Planned Behavior offers a parsimonious explanation of purposive behavior, but in the study of healthy and risk behaviors its sufficiency may be questioned (Perugini & Bagozzi, 2001). Working in the field of binge-drinking, we used two strategies for improving predictions from TPB: using new proximal antecedents of behaviors and adding new predictors. Results show that behavioral intention (BI) and behavioral expectations (BE) are not equivalent constructs, so that they cannot be used interchangeably. Hierarchical regression analyses show that where anticipated emotions (joy) improved TPB explanation about BI, anticipatory emotions (joy) did so about BE. The higher the future joy, anticipated or anticipatory, the higher, respectively, the intention and expectation to perform risk behavior in the near future.

Introduction

The Theory of Reasoned action (TRA; Fishbein & Ajzen, 1975) and Theory of Planned Behavior (TPB; Ajzen, 1991) assume that people engage in specific behaviors after a deliberative process in which they assess the likelihood of specific outcomes associated with the act along with the subjective value assigned to those outcomes. In these expectancy value theories, attitude, subjective norms and perceived control predict behavioral intention (BI), which is the main proximal antecedent to behavior. Intentions are defined in TRA/TPB as the amount of effort one is willing to exert to attain a goal (Ajzen, 1991). In this vein, intentions include motivation to perform a behavior.

Meta-analyses have shown moderate-high correlation between intention and behavior (e.g. Armitage & Conner, 2001), but this relation is weaker in health behaviors (see Albarracín, Johnson, Fishbein, & Muellereile, 2001; Conner & Sparks, 2005). Ajzen and Fishbein (2005) have discussed several factors to explain low intention-behavior relationships, such as level of specificity in the measures (e.g. “doing exercise” versus “cycling every day”); other researchers have followed this line, proposing a time lag between measures and real behavior (Sheeran & Orbell, 1998) or the stability and strength of attitudes (Conner, Sheeran, Norman, & Armitage, 2000). In order to improve behavioral predictions, several researchers are testing new antecedents of behavior other than intentions, such as behavioral expectations (BE). Warshaw and Davis (1985) and Davis and Warshaw (1992) defined BE as an estimate or subjective probability that a behavior will actually be performed, considering situational factors and past experience and anticipating changes in intentions or control limitations. Gordon (1990) has pointed out that intention is based on behavioral beliefs but expectations are focused on situational cues and past experiences with behavior. Where BI is a plan, BE is a prediction

(Gibbons, 2006). Moderators such as intention commitment and perceived control (Rhodes & Matheson, 2005) or level of experience (Carrera, Caballero, Muñoz, & Oceja, 2011; Pomery, Gibbons, Reis-Bergan, & Gerrard, 2009) must be taken into account to decide whether to use BI or BE (or both) as antecedents of behavior. Specifically, when individuals report low commitment, low perceived control and moderate experience it would be recommended to use BI and BE separately in order to make good predictions about future behavior. This framework is very useful on studying risky behaviors, especially if they are simultaneously associated with positive and negative outcomes.

Reviewing TPB predictors, Webb and Sheeran (2006) concluded that behavioral change research must include non-reasoned processes. TPB can be improved by adding motivational predictors to it. One of these constructs has been future-oriented emotions. In early proposals, Parker, Manstead and Stradling (1995) found that anticipated regret was a very important predictor of behavioral expectation of driving violations, and Richard, van der Pligt and de Vries (1995) found similar results on studying when people would use condoms in casual sex. Bagozzi, Baumgartner and Pieters (1998) proposed that anticipated emotions include personal estimation for both achieving and not achieving a goal. When people imagine the affective consequences of goal attainment or goal failure, these emotions have an important influence on intention and behavior. Emotions are not only general evaluations about a behavior (like attitudes), they are motivational processes that include action tendencies towards a goal (Frijda, 1986). Perugini and Bagozzi (2001) point out that anticipated emotions, in contrast to attitudes, are more dynamic and contingent in relation to contextual cues, can change depending on the context (e.g. drinking at a party makes me feel happy), and are less constant over time than attitudes (e.g. drinking is a negative behavior). As recent meta-analysis has shown (see Albarracín et al., 2001; Conner & Sparks, 2005), it is not enough to want to do something, it is necessary to include motivational energy to translate wishes into behaviors (see Perugini & Bagozzi, 2001).

Expanding on the subject of future-oriented emotions, Baumgartner, Pieters and Bagozzi (2008) have recently pointed out the difference between anticipated and anticipatory emotions. Anticipated emotions are affective reactions that a person may imagine experiencing in the future when certain events have occurred (e.g. joy if I imagine myself winning the lottery); anticipatory emotions are emotions currently experienced due to something that could happen in the future (e.g. hope if I think that I might win the lottery). We should emphasize that anticipated emotions are based on pre-factual thinking about imagined events – they do not need to be real, they are affective forecasts; but anticipatory emotions are real emotions experienced as responses to possible future events (phenomenologically people are not sure if those facts will happen or not) . This difference is important for our proposal. For some authors anticipated emotions are merely (cognitive) predictions about future emotions (e.g. Frijda, 2004), while others consider that anticipation of future behaviors and their outcomes (anticipatory emotions) induces the experiential qualities of an emotion (e.g. Zeelenberg & Pieters, 2009), positing a less cognitive basis. This different weight of cognitive and experiential aspect could be crucial for matching anticipated emotions with behavioral intentions and anticipatory emotions with behavioral expectations. The first pair would focus more on cognitive dimensions and the second pair on experiential reactions. Plans, intentions and wishes are imagined assumptions, and expectations would be evaluations that also considered situational constraints (e.g. my plan is to have a relaxing holiday, but taking into account my personal situation – small children, for example – the probability of fulfilling this prediction is low).

Anticipatory emotions as current emotions should motivate one to take appropriate actions for achieving positive goals and avoiding negative ones. Anticipatory emotions include contextual cues in the same vein as behavioral expectations. However, while anticipated emotions and intention also motivate one to act, they are virtual constructs based on a suppositional forecast, whilst anticipatory emotions and expectations are more contextual

evaluations about future events. In this line, Baumgartner et al. (2008) found, as they had expected, that judged likelihood of outcomes was related to anticipatory emotions but not to anticipated emotions.

Following a *theory broadening* perspective, in the following study we check whether behavioral intention and behavioral expectations are equivalent constructs which can be used interchangeably, and how anticipated and anticipatory emotions can improve predictions about them in the case of binge drinking. Binge drinking is related to impulsivity (Carlson, Johnson, Jacobs, 2010), so that emotional forecast could play an important role in its prediction.

Study 1 proposes adding future-oriented emotions (anticipated and anticipatory emotions) to TPB variables in order to predict both proximal antecedents of behavior (i.e. BI and BE), exploring a frequent risk behavior in the young population: binge drinking.

In Study 1 we tested whether adding future-oriented emotion (i.e. anticipated and anticipatory emotions) to TPB variables improves predictions about BI and BE. The two kinds of future-oriented emotions measure different emotional experience (imagined versus currently felt), so that we would expect them to play different roles in the prediction of BI and BE. Because BI is defined as behavioral beliefs and anticipated emotions are emotional beliefs, we expected a high correlation between them. However, BE is defined as an estimation of probability to act taking into account situational circumstances, a characteristic shared by anticipatory emotions, so that in this case also we expected a high correlation between the two. The anticipated-BE and anticipatory-BI correlations would be lower.

Study 1

Method

Participants and Procedure.

187 students from the Psychology Department at the *Universidad Autónoma de Madrid* (Spain) participated in this study, with an average age of 19.3 years ($SD = 2.2$). In order to study a risk

sample, we asked them about their experience of *drinking excessive alcohol*, without specifying a quantity or quality, so that each individual could apply their own criteria. We used an open format to obtain information about the meaning of excessive drinking for young people. Most of them considered as excessive: having negative physical and/or psychological reactions, and drinking more than four drinks¹, a quantity corresponding to the recommendations of the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2003) to define binge drinking (for males it was 5 or more drinks, and for females it was 4 or more drinks).

After filling out the questionnaire, 36 participants without any personal experience in *drinking excessive alcohol* were removed, leaving a final sample of 151 students (63 males and 88 females). Participation was voluntary and anonymous. Once they had signed the consent form, participants were randomly assigned to the two experimental conditions, 87 experienced participants (40 male and 47 female) to the anticipated emotions condition and 64 experienced participants (23 male and 41 female) to the anticipatory emotions condition. The difference in sample size is explained by the fact that the selection of experienced people was made after respondents had filled out the questionnaire, so as not to bias the answers. The questionnaire was designed to guarantee anonymity, asking about: age and sex; and personal frequency of excessive alcohol consumption (1 =never, 7 =very frequently). Attitude was measured with six unipolar 7-point scales, “To what extent do you think that drinking excessive alcohol is....”, with three positive (*good, positive, pleasant*) and three negative (*bad, negative, unpleasant*) items (positive items recoded, Cronbach's *alpha* = .71); perceived control was rated on two 7-point

¹ We selected a random sample of 25 participants (21 females and 4 males) in order to find out how participants define *binge drinking*. We found that the most frequent category (60%) was “psychological symptoms”, such as losing self-control or mental confusion. The second most widely cited categories were “number of drinks” (e.g. 4 or more alcoholic drinks in a row) and “physical symptoms”, such as “getting tipsy” (both cited by 44%).

scales (Cronbach's *alpha* = .75); social norm was measured by two items, positive and negative, both rated on 7-point scales with endpoints of *not at all* (1) to *very much* (7), in two social groups: friends (Cronbach's *alpha* = .79) and family (Cronbach's *alpha* = .74). We also asked about how often friends drink alcohol to excess, on a 7-point scale from 1 (*never*) to 7 (*very frequently*). Emotions (i.e. joy, anger, sadness, shame, fear, sorrow and regret) were measured by 7-point scales ranging from *very low intensity* (1) to *very high intensity* (7), and respondents were asked in two formats (between-subjects design): anticipated emotions ("How do you think you would feel after engaging in excessive drinking sometime in the near future?"); and anticipatory emotions ("How does the idea of engaging in excessive drinking sometime in the near future make you feel right now?"). When participants did not anticipate the emotion or did not feel it in the anticipatory condition they were to answer with a zero value. And finally, we asked about behavioral intention ("To what extent do you intend to drink alcohol excessively at any time in the near future?") and behavioral expectation ("What is the likelihood that you will drink alcohol excessively in the near future?").

Results

In order to check whether the two conditions (anticipated versus anticipatory emotions) were equivalent in the variables measured prior to their manipulation, we carried out ANOVA analysis on frequency of risk behavior, attitude, perceived control and social norms. We found no significant differences in any of this information (F_s (1, 149) from .05 to 1.77, $p_s > .05$): personal experience of the risk behavior ($M= 3.34$, $SD=1.19$ and $M= 3.45$, $SD= 1.23$ in anticipated and anticipatory condition, respectively); attitude (averaged between negative and recoded positive items, $M= 5.69$, $SD= .83$ and $M= 5.62$, $SD= .92$ in anticipated and anticipatory condition, respectively); perceived control (average of two items, $M= 5.64$, $SD= 1.13$ and $M= 5.82$, $SD= 1.1$ in anticipated and anticipatory condition, respectively); social norm (averaged between negative and recoded positive items), which included peers' social norm ($M= 4.33$, $SD= 1.22$ and $M= 4.43$,

$SD = 1.38$ in anticipated and anticipatory condition, respectively) and family's social norm ($M = 6.4$, $SD = .94$ and $M = 6.59$, $SD = .60$ in anticipated and anticipatory condition, respectively).

The purpose of the next analysis was to evaluate the intensity of anticipated and anticipatory emotions. To this end we calculated the mean of each emotion (i.e. including values from 0 to 7). Including zero values, each mean reflected not only emotional intensity but also frequency-relevance. Table 1 shows the means and standard deviation of each anticipated emotion and the percentage of participants who reported each emotion with intensity other than zero (the *not at all* value).

INSERT TABLE 1

The most relevant anticipated emotions were sorrow, shame, joy and regret, since they had the highest intensity and frequency, followed by sadness and anger, fear.

Table 2 shows the means and standard deviation of each anticipatory emotion, including zero values and percentage of participants who reported each emotion with intensity other than zero (the *not at all* value).

INSERT TABLE 2

The most relevant anticipatory emotions were sorrow, shame, regret and joy, since they had the highest intensity and frequency. It is interesting to note the presence of mixed emotions, that is, positive and negative emotions associated with the risk behavior, in both conditions. We did not find any significant differences between conditions with regard to emotional intensity ($F = 1, 149$) from $.45$ to 3.08 $ps > .05$).

TPB, anticipated and anticipatory emotions in the prediction of behavioral intention (BI) to drink excessive alcohol.

We set out to examine the role played by anticipated versus anticipatory emotions to improve the prediction from TPB variables about intention to perform the risk behavior. We wanted to check

how the consideration of different kinds of future-oriented emotions may improve TPB predictions about behavioral intention. We carried out a set of hierarchical regression analyses with standardized scores for controlling factor variability level.

We introduced TPB variables (attitude, perceived control, friends and family norm) in the first step, and in the second step added all anticipated emotions; the dependent variable was behavioral intention (BI). The first model explained 16% ($R^2_{ch} = .16$), of intention to perform the risk behavior and was significant ($F(4, 82) = 5.34, p = <.001$), and attitude was the main predictor ($\beta = -.40 p < .001$). The second model showed a significant improvement to 28 % ($R^2_{ch} = .28, F(7, 75) = 2.97, p < .01$), where attitude ($\beta = -.29 p < .05$), perceived control ($\beta = -.20 p < .05$) and joy ($\beta = .21 p < .05$) were significant predictors. As such, they anticipated joy in the future participant's higher intention to drink excessive alcohol. Following Trafimow's (2004) suggestions, we used binomial effect size display (see Rosenthal & Rosnow, 1991) in order to determine the real meaning of change in R^2 . We calculated the change in percentage of successes from the first model ($R_1 = .45$) to the second model ($R_2 = .61$). This analysis showed that the ΔR^2 of 12% implies, when it is corrected, an increase in the probability of success of 8%, which is a significant-moderate improvement.

We then repeated that hierarchical regression analysis with TPB variables and anticipatory emotions onto behavioral intention, but only the first model was significant ($R^2_{ch} = .19, F(4, 59) = 4.77, p < .002$), and attitude ($\beta = -.33 p < .01$) was the best predictor. Anticipatory emotions did not improve the prediction when they were added to the TPB variables.

INSERT TABLE 3

TPB, anticipated and anticipatory emotions in the prediction of behavioral expectation (BE) to drink excessive alcohol.

We repeated both hierarchical regression analyses using behavioral expectation as dependent variable. First, behavioral expectation was regressed onto attitude, perceived control and both

social norms (friends and family), and in a second step all anticipated emotions were added. The first model was significant ($R^2_{\text{ch}} = .15$, $F(4, 82) = 4.78$, $p < .002$), and attitude ($\beta = -.27$, $p < .01$) and perceived control ($\beta = -.27$, $p < .01$) were significant predictors. Anticipated emotions did not improve the model, but when we used anticipatory emotions in the second step, the improvement was significant. The first TPB model was significant ($R^2_{\text{ch}} = .11$, $F(4, 59) = 2.97$, $p < .02$), attitude being the main predictor ($\beta = -.33$, $p < .02$), and when anticipatory emotions were included the prediction was better ($R^2_{\text{ch}} = .26$, $F(7, 52) = 2.74$, $p < .01$), and joy was the only significant predictor ($\beta = .42$, $p < .002$). The percentage of success changed from the first model ($R_1 = .41$) to the second model ($R_2 = .62$). This analysis showed that the ΔR^2 of 15% implies, when it is corrected, an increase in the probability of success of 10.5%, which is a significant-moderate improvement.

BI and BE as different proximal antecedents of behavior.

In order to further differentiate between behavioral intention and expectation, we carried out in each condition a within-subjects ANOVA test. In the anticipated emotion condition we found a significant difference between behavioral intention and behavioral expectation ($F(1, 86) = 18.9$, $p < .001$, $\eta^2 = .18$ ($M = 2.74$, $SD = 1.5$ and $M = 3.31$, $SD = 1.7$, respectively)); we also found a significant discrepancy between behavioral intention and behavioral expectation in the anticipatory emotion condition ($F(1, 63) = 9.42$, $p < .01$, $\eta^2 = .13$ ($M = 3.01$, $SD = 1.7$ and $M = 3.47$, $SD = 1.8$, respectively)). Behavioral expectations were always higher than behavioral intentions. These results show that the two concepts are measuring different information, and behavioral intentions were always lower than behavioral expectation because intentions are coherent with the healthy attitude reported, but young people recognize that good intentions are not always fulfilled. Situational factors, both social and non-social, have an important influence over behavior, and the more experienced young people are well aware of this. We found a significant correlation between personal experience and peers' experience in both conditions ($r(N$

=87) = .22 and r ($N= 64$) = .27 $p < .05$ in the anticipated and anticipatory conditions, respectively), suggesting that the social situation is playing an important role which needs to be studied in more depth.

Knowing that the two concepts are not exactly measuring the same predictions, we tested whether the self-reporting of future-oriented emotions might have some differential influence over behavioral intention and behavioral expectation. On comparing the two dependent variables between emotional conditions we found no differences between the two emotional conditions in either behavioral intention ($F (1, 149) = 1.01 p = .31$) or behavioral expectation ($F (1, 149) = .29, p = .58$).

General Discussion

The Theory of Planned Behavior offers a parsimonious explanation of purposive behavior. However, when we focus on health or risky behaviors its sufficiency may be questioned (Perugini & Bagozzi, 2001). Two strategies are possible for improving TPB without changing its main components (attitude, subjective norm and perceived control): using new proximal antecedents of behaviors and adding new predictors. We followed both in this report.

In relation to proximal antecedents, behavioral intention and behavioral expectations, as proposed by Warshaw and Davis (1985), provide good possibilities for improving TPB predictions. Some authors have found similarities between the two concepts (Conner & Sparks, 1996; Fishbein, 1997; Ajzen, 2002), whilst others have found important differences (Gordon, 1990; Rhodes & Matheson, 2005). We tested in the context of a risk behavior (i.e. *binge drinking*) whether or not the two were equivalent.

Following Pomery et al. (2009), in Study 1 we chose a frequent risk behavior, drinking alcohol excessively (i.e. *binge drinking*), in order to highlight the differences between BI and BE. Our aim was to explore the differential role played by anticipated and anticipatory emotions in the prediction of both proximal antecedents (i.e. BI and BE). Anticipated emotions have proved to be

useful for improving predictions from TPB (see Bagozzi, Baumgartner, & Pieters, 1998; Perugini & Bagozzi, 2001), but only Baumgartner, et al. (2008) have explored differential theoretical and goal-directed behavioral effects of two future-oriented emotions: anticipated versus anticipatory emotions.

Study 1 shows that BI and BE did not measure the same information. Behavioral expectation was always higher than behavioral intention in both emotional conditions. This means that participants do not plan to perform risk behavior, but they realize that situational factors might change their intentions, so that expectation is higher. In Study 1, TPB made good predictions about BI and BE, and attitude was the best predictor. TPB provided a significant but moderate explanation of both proximal antecedents. These results invited us to explore emotional variables in order to improve predictions and to identify in more detail the difference between the two concepts (BI and BE).

We did not find any significant differences with regard to emotional intensities between the anticipated and anticipatory conditions, so that emotional intensity does not discriminate between the two constructs. However, these different emotional experiences showed clearly differential roles in the prediction of proximal antecedents of behavior. Where anticipated emotions improved TPB explanations about behavioral intention, anticipatory emotions did so about behavioral expectation. Joy was the best predictor in both conditions (anticipated and anticipatory). This suggests differential roles for these two emotional formats. More research is necessary to explore how the level of uncertainty included in the emotional experience measured might explain these differences. The higher the future joy, anticipated or anticipatory, the higher, respectively, the intention and expectation to perform risk behavior in the near future. Reporting anticipated or anticipatory emotions did not change either behavioral intention or behavioral expectation. Our results show that future-oriented emotions provide useful information as a complement to the

TPB model for predicting proximal antecedents of behavior, though more research is necessary to predict real behavior.

Finally, the present studies suggest the relevance of testing how different measures of future-oriented emotions can help us not only to improve TPB predictions but also to discriminate between other proximal antecedents of behavior, such as behavioral willingness or implementation intentions.

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	%	Mean (<i>SD</i>)
anger	33.3	1.45 (2.2)
sadness	33	1.65 (2.3)
shame	55	2.50 (2.5)
joy	50	2.00 (2.1)
sorrow	62	2.55 (2.3)
fear	15	.50 (1.3)
regret	46	1.74 (2.3)

Table 1. Percentage of participants who reported each emotion with intensity other than zero,
Mean and Standard Deviation of anticipated emotions.

	%	Mean (<i>SD</i>)
anger	23.4	.96 (1.9)
sadness	26.5	1.28 (2.2)
shame	50	2.01(2.3)
joy	40.6	1.70 (2.3)
sorrow	59.3	2.46 (2.4)
fear	25	.95 (1.8)
regret	42.1	1.65 (2.3)

Table 2. Percentage of participants who reported each emotion with intensity other than zero, Mean and Standard Deviation of anticipatory emotions.

Dependent Variable	Step	Variable(s) entered	β (1º step)	β (2º step)
BI	1.	attitude	-.40***	-.29*
		perceived control	--	-.20*
		peer norm	--	--
		family norm	--	--
	2.	anticipated emotions	--	.21*(joy)
	R^2_{ch}		.16	.28
Model F			5.34***	2.97**
	1.	attitude	-.33**	--
		perceived control	--	--
		peer norm	--	--
		family norm	--	--
	2.	anticipatory emotions	--	--
R^2_{ch}			.19	--
			4.77**	--
	Model F			
BE	1.	attitude	-.27**	
		perceived control	-.27**	
		peer norm	--	
		family norm	--	
	2.	anticipated emotions	--	--
	R^2_{ch}		.15	--
Model F			4.78**	--
	1.	attitude	-.33*	--
		perceived control	--	--
		peer norm	--	--
		family norm	--	--
	2.	anticipatory emotions	--	.42**(joy)
R^2_{ch}			.11	.26
			2.97*	2.74**
	Model F			

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

Table 3. Hierarchical regressions of BI and BE onto TPB variables, and anticipated or anticipatory emotions.