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In press: *Psychology, Crime and Law*

Crime as Risk Taking

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Engagement in criminal activity may be viewed as risk taking behaviour as it has both benefits and drawbacks that are probabilistic. In two studies, we examined how individuals' risk perceptions can inform our understanding of their intentions to engage in criminal activity. Study 1 measured youths' perceptions of the value and probability of the benefits and drawbacks of engaging in three common crimes (i.e., shoplifting, forgery, and buying illegal drugs), and examined how well these perceptions predicted youths' forecasted engagement in these crimes, controlling for their past engagement. We found that intentions to engage in criminal activity were best predicted by the perceived value of the benefits that may be obtained, irrespective of their probabilities or the drawbacks that may also be incurred. Study 2 specified the benefit and drawback that youth thought about and examined another crime (i.e., drinking and driving). The findings of Study 1 were replicated under these conditions. The present research supports a limited rationality perspective on criminal intentions, and can have implications for crime prevention/intervention strategies.

Keywords: crime; risk; subjective expected utility; probability; drinking and driving; shoplifting; forgery

Introduction

When considered in the context of crime, the notion of risk is typically discussed in terms of the risk of crime and/or victimization (e.g., Reisig, Pratt, & Holtfreter, 2009) or in terms of the factors placing an individual at risk of becoming involved in crime (e.g., Bowey & McGlaughlin, 2006). In this paper, we consider crime as a form of risky behaviour that people may decide to engage in after perceiving the outcomes associated with the illegal behaviour. Indeed, akin to Knight's (1921) definition of risk that highlights the potential benefits and drawbacks of engaging in a behaviour along with their associated probabilities of occurrence, crime may involve positive or negative outcomes that are less than certain. For instance, shoplifting may provide the offender with a much desired product or an indirect means of obtaining such a product after selling the stolen item. On the other hand, shoplifting may also result in a criminal conviction and a prison sentence. An individual may perceive the chances of obtaining a desired product as being somewhat greater than the chances of being convicted and imprisoned.

Rational choice theories of risk taking such as subjective expected utility theory portray people as rational decision makers who attach values to the possible rewards and the costs associated with an action, calculate the probabilities of these rewards and costs, weigh the values of rewards and costs by their respective probabilities, and choose the course of action that maximizes rewards and minimizes costs (see Anand, 1995; Fishburn, 1981; Gruber, 2001). Thus, such theories suggest that individuals use *compensatory* decision strategies that weight and integrate all of the available and relevant information in order to make a decision as to whether or not to engage in a risky behaviour. A rational choice perspective has been used by some to explain engagement in criminal activity (see Becker, 1968; Clarke & Felson, 1993;

Cornish & Clarke, 1986; Seipel & Eifler, 2008; Newman, Clarke, & Shoham, 1997; Piquero & Tibbetts, 2002). For instance, in an early study, Carroll and Weaver (1986) found that when intending to shoplift, offenders reported considering specific tactics, risks and deterrents, as well as rewards or motivations such as attraction to an item and use or need for it. Nagin and Paternoster (1993) also demonstrated that perceived costs and benefits were predictive of crime.

However, it is argued that people's rationality is bounded by external constraints such as limited time, information and resources as well as internal constraints such as limited cognitive processing ability and emotions (see Gigerenzer, Todd, & the ABC Group, 1999; Kahneman, 2003; Simon, 1956, 1982; Slovic, Finucane, Peters, & McGregor, 2002). This suggests that people often use *non-compensatory* strategies that ignore much of the available and relevant information when making a decision. Indeed, a limited rationality perspective has also been applied to understanding criminal engagement (see Johnson & Payne, 1986; Trassler, 1993; Tunnell, 2002). For instance, in an early study, Feeney (1986) found that most robbers said their decisions to rob were motivated by a desire for money (e.g., for drugs) or for other reasons such as out of anger or for excitement. Over half said their decisions to rob were impulsive and did not involve planning, and nearly two-thirds said they had not thought at all of the negative consequences of committing the crime such as getting caught. More recently, studies have shown that burglars use "fast and frugal" heuristic strategies, that rely on one cue alone, in their decision about whether a residential property is occupied or not (Snook, Dhimi, & Kavanagh, 2009) and in their choice of which property to burgle (Garcia-Retamero & Dhimi, 2009).

Research on risk taking behaviour in general has typically found evidence consistent with a limited (rather than full) rationality perspective. In particular, studies

of youth have found that risk taking is predicted by or associated with their focus on the perceived benefits of engaging in risky behaviours, and there is little evidence to suggest that they weight and integrate the costs and benefits. For example, Siegel and his colleagues found that engagement in behaviours including alcohol use, illegal drug use, sexual activity, stereotypical male behaviours, imprudent behaviours, and socially unacceptable behaviours by college students as well as adolescents diagnosed with conduct disorder, was better predicted by their perceived benefits of engaging in these behaviours than the perceived costs (Lavery, Siegel, Cousins, & Rubovitts, 1993; Parsons, Halkitis, Bimbi, & Borkowski, 2000; Parsons, Siegel, & Cousins, 1997; Shapiro, Siegel, Scovill, & Hays, 1998; Siegel, Cousins, Rubovitts, Parsons, Lavery, & Crowley, 1994). Bauman and his colleagues measured youths' perceptions of the desirability and probability of the consequences of risky behaviours (e.g., alcohol, tobacco and drug use, and risky sexual behaviour) and found inconsistent evidence for the idea that youths maximize subjective expected utility in past or forecasted risk taking (Bauman & Bryan, 1983; Bauman, Fisher, & Bryan, 2006; Bauman, Fisher, Bryan, & Chenoweth, 1984; 1985; Bauman, Fisher, & Koch, 1989; Bauman & Udry, 1981; Gilbert, Bauman, & Udry, 1986).

The studies by Siegel and his colleagues, however, did not separately measure the subjective probabilities of the costs and benefits, and so it is unclear if young people were driven by their desire to obtain the benefits or their belief that the benefits are probable, or both. By contrast, the studies by Bauman and his colleagues did not examine the independent effects of the value attached to the costs and benefits and the subjective probabilities of the costs and benefits.

Given that Knight (1921) pointed out that the concept of risk should be defined as any expected outcome – positive or negative – whose probability of

occurrence is less than certain, in the present research, we fully unpack youths' risk perceptions of criminal activities in terms of their perceived: (a) importance of the potential benefits, (b) importance of the potential drawbacks, (c) probability of obtaining the benefits, and (d) probability of incurring the drawbacks. Our main goal was to determine which components of youths' risk perceptions are valid predictors of their forecasted engagement in criminal activity, controlling for their past engagement.

Competing views on the impact of risk perceptions on criminal engagement

Several competing views about the factors that predict forecasted engagement in criminal activity may be examined. First, we investigate competing views about the predictive value of the perceived benefits versus the perceived drawbacks of engaging in criminal activity. In accordance with descriptive theories of risky choice, such as prospect theory (Kahneman & Tversky, 1979), that predict loss aversion or greater sensitivity to losses than to gains of equal magnitude, one might consider that forecasted engagement in criminal activity would be better predicted by youths' assessments of expected loss rather than expected gain. Conversely, and consistent with some past literature on youth risk taking and on crime reviewed above (e.g., Feeney, 1986; Lavery et al., 1993; Parsons et al., 2000; Parsons et al., 1997; Shapiro et al., 1998; Siegel et al., 1994), many risky behaviours appear to be taken because of their potential desirable consequences in spite of the possible losses they also entail. Based on those findings, one might alternatively consider that youths' forecasted criminal activity is based on their expected benefits.

Second, we examine views about the predictive value of perceived importance of outcomes versus their subjective probabilities in order to clearly understand the basis for any observed gain-loss asymmetry in the prediction of forecasted criminal

activity. For example, if perceived benefits are found to predict forecasts better than perceived drawbacks, that may be due to the fact that benefits are perceived as more likely than drawbacks, that benefits are perceived as being greater in magnitude than drawbacks, or both. We suggest that youths' perceptions of outcome importance would be more influential in their forecasted criminal activity than their subjective probabilities of the outcomes because the former would be easier to mentally construct. Outcomes, such as being caught by the police or being sent to prison can be vividly imagined. By contrast, the probabilities of such events are second-order judgments (i.e., judgments of the likelihood of what has been judged to be a possible outcome of a given act) that are less amenable to visualization. Stated differently, one can represent a possible outcome (e.g., being sent to prison) without thinking about its probability, but one cannot think about the probability of the outcome without thinking about the outcome itself.

Finally, we investigate competing views about the complexity of the model predicting forecasted engagement in criminal activity. According to the rational choice perspective, forecasted criminal activity should be the product of an interaction of the importance (or value) of perceived outcomes and their subjective probabilities. By contrast, according to the limited rationality perspective and consistent with some past research on youth risk taking and on crime (e.g., Bauman et al., 2006; Bauman et al., 1989; Feeney, 1986; Lavery et al., 1993; Parsons et al., 2000; Parsons et al., 1997; Shapiro et al., 1998; Siegel et al., 1994), youths' forecasted engagement in criminal activity would be better predicted simply by a measure of the perceived importance of potential benefits than from a measure that interactively combined the perceived importance of the potential benefits with the subjective probability of the benefits.

To date, no study has provided a clear test of the independent predictive validities of these components or how they might interact in predicting forecasted engagement in criminal activity. Is youths' forecasted engagement in criminal activity preceded by a thought process that weights and integrates all of the available and relevant information? Or, is youths' forecasted criminal engagement the consequence of a thought process that uses only a limited amount of the available and relevant information? Furthermore, while much of the extant research on engagement in criminal activity has examined past crimes (e.g., Ostrowsky & Messner, 2005) or experts' forecasts of potential offending (e.g., Hanson, 2009), we focused on individuals' intentions to engage in criminal activity, *controlling* for their past engagement. This enables investigation of the cognitive determinants of the intent to commit crimes. Beyond the practical implications for informing intervention strategies, our findings can inform theories of crime by demonstrating the importance of specific risk perception measures in predicting intentions to engage in criminal activity.

We conducted two studies that tested the above competing views on the impact of risk perceptions on forecasted engagement in criminal activity. In Study 1, youth were asked to think about the potential benefits and drawbacks of three different criminal activities (i.e., buying an illegal drug, shoplifting a small item, and forging a signature), to judge the perceived importance and probabilities of these outcomes, and to forecast their engagement in these behaviours. In Study 2, we aimed to replicate and extend the findings of Study 1 by studying drinking and driving and presenting youth with a potential benefit and drawback of this behaviour, thus controlling for the specific outcomes that youth thought about and responded to.

Study 1

Aims

The main aim of Study 1 was to examine how well the following variables predict forecasted criminal engagement, controlling for past engagement: 1) perceived importance of the potential benefits, 2) perceived importance of the potential drawbacks, 3) subjective probability of the benefits, and 4) subjective probability of the drawbacks, 5) perceived importance of the benefits × subjective probability of the benefits, and 6) perceived importance of the drawbacks × subjective probability of the drawbacks.

Method

Participants

Ninety undergraduates volunteered to participate in the study in return for bonus credits in an introductory psychology course. Forty-three percent ($n = 39$) were male. The mean age of the sample was 19.42 years ($SD = 1.85$).

Survey

Participants completed a survey comprising three sections. Two sections asked about risk perceptions and one about forecasted engagement in criminal activity for three illegal behaviours. The three behaviours were buying an illegal drug, shoplifting a small item, and forging a signature. These have been shown to be criminal activities that university students may engage in (Weber, Blais, & Betz, 2002).

In one section of the survey, participants were asked to think about the potential *benefits* of engaging in the behaviours. For each behaviour, they were asked to rate the importance of the benefits that they might obtain on an 11-point scale ranging from 0 (*not at all important*) to 100 (*extremely important*). Following each rating, participants were asked to indicate their chances, on average across the times they would engage in this behaviour, of obtaining these benefits on an 11-point scale

from 0% (*no chance at all*) to 100% (*absolutely certain*). Another section of the survey paralleled this one, except that participants were asked to think about the potential *drawbacks* of engaging in the same behaviours, and to rate the importance of the drawbacks, followed by the average chances of incurring the drawbacks. Thus, perceived probabilities of the benefits and drawbacks were obtained on average across the times that youth might engage in the behaviour, to avoid any problems associated with youth giving extremely high or extremely low probability responses based on one experience alone.

The third section of the survey asked about past and forecasted engagement in the behaviours. Participants were asked to first forecast the chances that they would engage in each of the behaviours in the following 12 months. Ratings were made on an 11-point scale from 0% (*no chance at all*) to 100% (*absolutely certain*).

Participants were then asked to report if they had ever (yes/no) engaged in each of the behaviours in the past 12 months, and if so how many times. Such self-report techniques are often recommended and used to measure crime rates (e.g., Junger-Tas & Marshall, 1999).

Procedure

The order of the survey's first two sections was fully counterbalanced across participants. The introduction to each section described the task and provided instructions to complete it via an example of how a hypothetical participant completed an item in it. Participants' age and gender were also elicited at the beginning. The survey was self-administered in small groups, and took approximately 25 minutes to complete.

Findings

Past and forecasted criminal engagement

In the past 12 months, 58.43% of the sample reported buying an illegal drug, 46.67% said they had shoplifted a small item, and 62.22% said they had forged a signature. Across participants, the mean frequency of past engagement was 3.06 ($SD = 7.16$) for buying an illegal drug, 0.48 ($SD = 1.09$) for shoplifting, and 0.96 ($SD = 2.09$) for forgery. The mean forecasted chances of buying an illegal drug in the next 12 months was 27.78% ($SD = 35.09$), mean forecasted chances of shoplifting was 9.33% ($SD = 18.83$), and mean forecasted chances of forgery was 22.78% ($SD = 28.13$). There were significant positive correlations between past and forecasted criminal engagement: $r = .61$ for buying an illegal drug, $r = .55$ for shoplifting, and $r = .66$ for forgery, $ps < .001$.

Predicting forecasted criminal engagement

We conducted separate three-step hierarchical multiple linear regression analyses for each behaviour in order to determine the relative validity of perceived importance of outcomes (benefits and drawbacks), the subjective probabilities of these outcomes, and the interaction of outcomes by probabilities, in predicting forecasted criminal engagement, controlling for past engagement. In each model, frequency of past criminal engagement was entered in step 1. In step 2, the predictor variables (i.e., perceived importance of the benefits, perceived importance of the drawbacks, subjective probability of the benefits, and subjective probability of the drawbacks) were entered. In step 3, the interaction terms (i.e., importance of benefits \times probability of benefits, and importance of drawbacks \times probability of drawbacks) were entered.

All of the full models were statistically significant and according to the adjusted R^2 explained 65% of the variance in forecasted buying an illegal drug, 64% of the variance in forecasted shoplifting, and 60% of the variance in forecasted forgery. Tables 1 to 3 show that the main findings were replicated across the three

behaviours. Here, beyond past engagement, forecasted criminal engagement was best predicted by the perceived importance of the benefits. Although the subjective probability of the benefits was also a significant predictor of forecasted forgery, the magnitude of the effect was somewhat smaller.

TABLES 1 TO 3 ABOUT HERE

Discussion

Study 1 therefore supports the notion that intentions to engage in criminal activities are best predicted by individuals' perceptions of the importance or value of the benefits that may be gained, irrespective of their probabilities or the drawbacks that may also be incurred. This is consistent with past literature on youth risk taking that highlights the significance of the benefits to youth and offenders' use of simple decision strategies (e.g., Feeney, 1986; Garcia-Retamero & Dhimi, 2009; Lavery et al., 1993; Parsons et al., 2000; Parsons et al., 1997; Shapiro et al., 1998; Siegel et al., 1994; Snook et al., 2009). It is also consistent with the idea that outcomes are easily to mentally construct and apply to decisions to engage in future behaviours.

However, in Study 1 we did not control for the actual benefits and drawbacks that youth thought about and responded to. One strength of this approach is that it examines the perceived risk of engaging in criminal activity from the perspective of youth rather than the adult-researcher (see also Beyth-Marom, Austin, Fischhoff, Palmgren, & Jacobs-Quadrel, 1993; Dhimi & Garcia-Retamero, 2010; Dhimi, Mandel, & Garcia-Retamero, 2010). On the other hand, it is important to study the robustness of the effect under more controlled conditions.

Study 2

Aim

The main aim of Study 2 therefore was to replicate the findings of Study 1 controlling for the outcomes that youth thought about and responded to. In addition, Study 2 aimed to test the generalisability of the findings of Study 1 by focusing on a different criminal activity, namely drinking and driving.

Method

Participants

Participants were 105 undergraduates who volunteered to participate in the study in return for bonus credits in an introductory psychology course. Thirty-six percent ($n = 38$) were male. The mean age of the sample was 20.81 years ($SD = 3.75$).

Survey

Participants completed a survey comprising three sections. Two sections asked about risk perceptions and one asked about forecasted drinking and driving (after consuming five or more alcoholic drinks which would be over the legal alcohol limit for driving). Here, risk perceptions were elicited for a specific possible benefit and drawback of drinking and driving (i.e., it is cheaper than alternative ways of returning home, and it may lead to a negative formal/legal sanction, respectively). These outcomes were taken from a previous study which used a qualitative method to elicit youths' perceptions of the possible positive and negative outcomes associated with drinking and driving (Dhami et al., 2010).

As in Study 1, in one section of the survey participants were asked to imagine drinking and driving. They then read about a possible *benefit* of drinking and driving, and rated the importance of the benefit on an 11-point scale from 0 (*not at all important*) to 100 (*extremely important*). Following that, participants rated the chances of obtaining the benefit on an 11-point scale from 0% (*no chance at all*) to 100% (*absolutely certain*). A second section of the survey similarly presented

participants with a possible *drawback* of drinking and driving that they rated in terms of importance, and chances of occurring. Finally, the third section of the survey asked about past and forecasted drinking and driving. Participants rated the chance that they would drink and drive in the following 12 months on an 11-point scale from 0% (*no chance at all*) to 100% (*absolutely certain*). Participants then reported if they had ever (yes/no) engaged in drinking and driving in the past 12 months, and if so, how many times.

Procedure

The order of the survey's first two sections was counterbalanced across participants. The introduction to each section described the task and provided instructions to complete it via an example of how a hypothetical participant completed an item in it. Participants' age and gender were also elicited at the beginning. The survey was self-administered in small groups, and took approximately 25 minutes to complete.

Findings

Past and forecasted drinking and driving

Twenty-three percent of the sample reported drinking and driving in the past 12 months (after consuming five or more alcoholic drinks). Across participants, the mean frequency of drinking and driving was 0.25 ($SD = 0.79$). The mean forecasted chances of drinking and driving in the next 12 months was 4.86% ($SD = 11.94$). There was a significant positive correlation of $r = .50$ between past and forecasted drinking and driving, $p < .001$.

Predicting forecasted drinking and driving

As in Study 1, we conducted a three-step hierarchical multiple linear regression analysis to predict forecasted drinking and driving. Past frequency of drinking and driving was entered in step 1. In step 2, the predictor variables (i.e., perceived

importance of the benefits, perceived importance of the drawbacks, subjective probability of the benefits, and subjective probability of the drawbacks) were entered. In step 3, the interaction terms (i.e., importance of benefits \times probability of benefits, and importance of drawbacks \times probability of drawbacks) were entered.

The full model was statistically significant and according to the adjusted R^2 explained 25% of the variance in forecasted drinking and driving. Table 4 shows that beyond past drinking and driving, only perceived importance of the benefits was a significant predictor of forecasted drinking and driving.

TABLE 4 ABOUT HERE

Discussion

Study 2 therefore replicated the findings of Study 1, when controlling for the outcomes that youth thought about and to which they responded. Study 2 also demonstrated that the findings of Study 1 could be generalized to another criminal activity (i.e., drinking and driving) that is common among university populations (Paschal, 2003; Steptoe et al., 2004). Intentions to drink and drive are best predicted by individuals' perceptions of the importance or value of the benefits that may be gained, irrespective of their probabilities or the drawbacks that may also be incurred.

General discussion

The present research described youths' past and forecasted engagement in a range of illegal behaviours, and it predicted their forecasted engagement in these behaviours, controlling for their past engagement. The findings contribute to the extant literature on (limited) rational choice theories of both risk taking and crime in three key ways. First, we show that the prediction of forecasted engagement in criminal activity relied on a model that, given past engagement, was sensitive only to the perceived importance of the benefits associated with engaging in the relevant behaviour. Indeed,

the descriptive model supported by the current findings is simple in two respects. First, no interaction terms were reliable, contrary to the subjective expected utility model, which relies exclusively on such terms. Second, only one predictor variable was reliable for all but one of the behaviours studied. Thus, the model is simple in the sense that the number of considered factors appear to be minimal. These findings accord with previous literature indicating that people rely on simple heuristics to arrive at decisions (see Gigerenzer et al., 1999; Kahneman, Slovic, & Tversky, 1982; Slovic et al., 2002). The present findings are also consistent with past research demonstrating that offenders use limited rationality (e.g., Feeney, 1986; Garcia-Retamero & Dhimi, 2009; Johnson & Payne, 1986; Snook et al., 2009; Trassler, 1993; Tunnell, 2002). In an earlier study, Moore and Gullone (1996) also found that youth engagement in the general categories of major and minor crimes and dangerous driving was predicted by a limited number of risk perceptions. They, however, did not test interaction effects or specify the precise behaviours and outcomes, as we did.

Second, the present research found that contrary to the aphorism that ‘losses loom larger than gains (of equal magnitude)’ (notably captured in Kahneman and Tversky’s, 1979, prospect theory), gains in fact appear to loom larger than losses in youths’ forecasted engagement in criminal activity. The present findings are consistent with the small body of recent research showing that youths’ *intentions* to take risks are better explained by their perceptions of the expected benefits than the costs (e.g., Halpern-Felsher, Biehl, Kropp, & Rubinstein, 2004; Parsons et al., 1997; Weber et al., 2002). However, as with the studies on past risk taking reviewed earlier, these studies on future risk taking often confounded outcomes and probabilities. The present research clearly separated the benefits and drawbacks, and the outcomes from their probabilities.

Finally, the present research showed that the focus on gains was largely restricted to outcomes alone, while probabilities were not predictive of forecasted engagement in criminal activity. Youth may focus on the importance rather than the probability of benefits because it is easier to think about how much benefit doing Y would bring than to think about how probable that level of benefit would be if Y were enacted. Moreover, it may be that the benefits are immediate and thus experienced or easier to imagine being experienced, whereas the drawbacks are long-term and may therefore have not been experienced or may be difficult to imagine. However, youth in Study 1 were not asked to identify the benefits and drawbacks that they thought about, and in Study 2, both the benefit and drawback presented to youth were those that would occur during driving and so were potentially relatively equal in their time perspective. Recent studies of youths' perceptions of risky driving behaviours, including drinking and driving, have found mixed evidence for the idea that the perceived benefits are short-term (Dhami & Garcia-Retamero, 2010; Dhami et al., 2010). Nevertheless, research could be designed to determine if the short-term nature of perceived potential benefits of illegal behaviours renders them more predictive of forecasted criminal engagement than the long-term nature of perceived potential drawbacks.

Limitations and directions for future research

One could argue that our sample of university students limits the generalisability of the findings. While this population is not typical of offending groups and is unlikely to be processed through the criminal justice system, a sizeable proportion of the participants in the present research had engaged in the illegal behaviours studied in the past 12 months. These behaviours are common and carry prison sentences.

Nevertheless, future research ought to be directed at useful replications with first-time

versus repeat offenders, generalist versus specialist offenders, and opportunistic versus professional offenders. However, there are ethical issues involved in studying offenders 'at work', and there is also a limitation to studying incarcerated offenders.

The present study attempted to overcome the shortcomings of some past research by separately measuring the different components of risk (i.e., perceived importance of the benefits and drawbacks, and subjective probabilities of the benefits and drawbacks) and examining their independent and interactive value in predicting forecasted engagement in criminal activity, controlling for past engagement. In the present cross-sectional design, there was a predictable significant positive association between past and forecasted criminal engagement. Nevertheless, future research could adopt a longitudinal design to examine how well youths' forecasts predict actual future criminal engagement. However, this may be ethically unsound (e.g., asking youth to think about the potential benefits of crime may promote criminal involvement), and practically difficult given the time and resources required.

Although a sizeable proportion of the variance in forecasted engagement in criminal activity could be accounted for by the perceived importance of the benefits, there is also variance that remains to be accounted for. Future research could aim to identify other factors that predict forecasted criminal engagement either directly, or indirectly through influencing risk perceptions. For instance, more recently, some researchers have recognized the role of non-cognitive factors such as emotions in explaining risk taking. Loewenstein, Weber, Hsee, and Welch (2001) argue that both anticipated and anticipatory positive and negative emotions such as regret and excitement may influence risk taking both directly and indirectly through impacting risk perceptions.

Implications for intervention

Beyond the implications for theories of ‘crime as risk taking,’ our findings have implications for intervention strategies. Typically, youth are considered to engage in risky behaviours, including illegal ones, because they either are unaware of the costs or the probabilities of incurring these costs. Thus, intervention and prevention have often focused on educating and informing youth of these (e.g., by advertising the penalty associated with drinking and driving) or increasing the costs and their probabilities (e.g., by increasing the penalties and the surveillance). However, the present findings cast some doubt on the effectiveness of such approaches. As we have found, although youth may be aware of the costs and even consider them to be important and probable, it is the value that they attach to the benefits (independent of their probabilities) that motivates their intentions to engage in criminal activity.

Therefore, strategies ought to identify and change youths’ perceptions of the potential benefits of engaging in criminal behaviours. Strategies should also be designed to provide youth with alternative (legal) behaviours which hold the desired benefits. For instance, many university campuses have established ‘safe ride services’ to reduce the likelihood that youth drink and drive or ride with a drunk driver (Caudill, Harding, & Moore, 2000). In addition, as others have suggested, youth could be taught to weight the positive and negative outcomes by their probabilities and integrate them so they can make better-informed choices (Baron & Brown, 1991; Beyth-Marom & Fischhoff, 1997). Ultimately, such strategies may serve to reduce the losses suffered by young people who engage in criminal behaviours as well as limit the demands placed on the criminal justice system as a result of youth offending.

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Table 1. Model predicting forecasted buying an illegal drug

Step Variables	Model 1 β	Model 2 β	Model 3 β
1. Past engagement	.61 ^{***}	.34 ^{***}	.35 ^{***}
2. Importance benefits		.56 ^{***}	.67 ^{***}
Probabilities benefits		.05	.08
Importance drawbacks		.19 [*]	.17
Probabilities drawbacks		-.15	-.17
3. Import. ben. \times prob. ben.			-.14
Import. draw. \times prob. draw.			.04
Adjusted R^2	.36	.66	.65
ΔR^2	.37	.31	.00
$F (df)$	50.40 ^{***}	34.87 ^{***}	24.54 ^{***}
	(1,88)	(5,88)	(7,88)
$\Delta F (df)$		19.98 ^{***}	.27
		(4,83)	(2,81)

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

Table 2. Model predicting forecasted shoplifting a small item

Step Variables	Model 1 β	Model 2 β	Model 3 β
1. Past engagement	.55 ^{***}	.48 ^{***}	.49 ^{***}
2. Importance benefits		.37 ^{***}	.32 [*]
Probabilities benefits		.10	.06
Importance drawbacks		-.22 [*]	-.11
Probabilities drawbacks		.05	.32
3. Import. ben. \times prob. ben.			.05
Import. draw. \times prob. draw.			-.36
Adjusted R^2	.30	.47	.47
ΔR^2	.30	.20	.01
$F(df)$	38.22 ^{***}	17.03 ^{***}	12.24 ^{***}
	(1,89)	(5,89)	(7,89)
$\Delta F(df)$		8.48 ^{***}	0.64
		(4,84)	(2,82)

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

Table 3. Model predicting forecasted forging a signature

Step Variables	Model 1 β	Model 2 β	Model 3 β
1. Past engagement	.66 ^{***}	.45 ^{***}	.45 ^{***}
2. Importance benefits		.27 ^{**}	.30 [*]
Probabilities benefits		.21 [*]	.25 [*]
Importance drawbacks		-.11	-.08
Probabilities drawbacks		-.03	.05
3. Import. ben. \times prob. ben.			-.07
Import. draw. \times prob. draw.			-.11
Adjusted R^2	.44	.61	.60
ΔR^2	.44	.19	.00
$F(df)$	69.57 ^{***}	28.43 ^{***}	19.98 ^{***}
	(1,89)	(5,89)	(7,89)
$\Delta F(df)$		10.58 ^{***}	0.20
		(4,84)	(2,82)

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

Table 4. Model predicting forecasted drinking and driving

Step Variables	Model 1 β	Model 2 β	Model 3 β
1. Past engagement	.50*	.46***	.43***
2. Importance benefits		.16	.44*
Probabilities benefits		-.08	.01
Importance drawbacks		-.07	.05
Probabilities drawbacks		.04	.37
3. Import. ben. \times prob. ben.			-.34
Import. draw. \times prob. draw.			-.41
Adjusted R^2	.24	.24	.25
ΔR^2	.25	.03	.02
$F(df)$	34.48***	7.61***	5.90***
	(1,104)	(5,104)	(7,104)
$\Delta F(df)$		0.92	1.44
		(4,99)	(2,97)

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

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