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Offenders' Risk Taking Attitude Inside and Outside the Prison Walls

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ABSTRACT

It has long been assumed that risk taking is closely associated with criminal behavior. One reason for placing criminals behind bars—aside from punishment and protecting the public—is to prevent them from engaging in further risky criminal activities. Limited attention has been paid to whether being inside or outside prison affects offenders' risk-taking behaviors and attitudes. We compared risk-taking behaviors and attitudes in five risk domains (ethical, financial, health/safety, recreational, social) among 75 incarcerated offenders (that is, offenders that are currently in prison) and 45 ex-offenders (that is, offenders that have just been released from prison). Ex-offenders reported higher likelihood of engaging in risky behavior, driven largely by a willingness to take more risks in the recreational and ethical domains. Benefits attributed to as well as risk perception did not differ between incarcerated and ex-offenders indicating that the opportunity to take risks might underlie behavioral risk intentions. Our results also indicate that risk taking activities are better predicted by the expected benefits rather than by risk perception, aside from the health/safety domain. These results highlight the importance of studying the person and the environment and examining risk-taking in a number of content domains.

Keywords: Domain-specific risk-taking; environment; ex-offenders; incarcerated offenders;

1. INTRODUCTION

Crime carries an enormous financial and social price tag. In the United States, there are over 2 million people behind bars, costing more than a trillion dollars a year.¹ It has long been assumed that risk taking is closely associated with criminal behavior,² and one reason for placing criminals behind bars—in addition to taking punitive measures and protecting the public—is to prevent them from engaging in further risky criminal activities. Imprisonment alters the environment of criminals, removing (or reducing) the opportunity to commit (at least certain kinds of) crimes. Reducing opportunity to commit crime is at the heart of Gottfredson and Hirschi's³ influential general theory of crime, which perceives opportunity as one of the chief factors responsible for criminal behavior. Similarly, researchers in psychology have long been interested in the role of the environment in shaping and influencing behavior. Herbert Simon,⁴ for example, is famously known for his insistence that to better understand human behavior we must study both the mind and the structure of the environment humans operate in. Surprisingly, though, very limited attention has been devoted to exploring whether being inside or outside the prison affects offenders' risk-taking. To address this gap, we compared behavioral risk intentions among offenders inside and outside the prison system (i.e., incarcerated offenders vs. ex-offenders) and investigated whether perceptions of risks and benefits predicted behavioral intentions in different risk domains.

Despite the prevailing notion that criminality is associated with risk-taking behavior, research comparing incarcerated offenders' and ex-offenders' risk taking is scarce, with even fewer studies comparing the two groups across more than one risk domain (e.g., financial vs. health). That is, researchers have largely tended to examine the two populations separately and to focus on a single risk content area. This is somewhat surprising, as ample evidence indicates that both groups engage in a range of risky activities, such as those involving health,

finances, and ethics. A recent investigation comparing incarcerated offenders and recently released offenders revealed that incarcerated offenders made riskier choices than ex-offenders for monetary gambles.⁵ The authors reasoned that greater opportunity to engage in risky activity with release from prison may have led to greater risk taking tendencies among the ex-offenders. In the present investigation, we compared incarcerated offenders' and ex-offenders' risk-taking behaviors and attitudes across a range of five risk domains. After all, it is possible that incarcerated offenders and ex-offenders exhibit different patterns of risky behavior in some domains (e.g., financial) but show similar risk tendencies in others (e.g., health).

There is ample evidence to indicate that incarcerated offenders and ex-offenders engage in risky behavior. One area that has received much attention is the health domain. A number of studies have shown that incarcerated offenders often engage in unprotected sex,^{6,7} with a higher incidence of sexually transmitted diseases (e.g., HIV/AIDS) and Hepatitis B and C⁸ reported among incarcerated offenders than the general population. Others have found that alcohol⁹ and drug dependence¹⁰ are more prevalent among incarcerated offender populations.

Ex-offenders have been repeatedly shown to engage in health-related risks. A growing body of literature has found an increased risk of death among ex-offenders in the first few weeks following a release from prison,¹¹ with drug use and overdose being recognized as the principle factor responsible for the elevated death rate.¹² This is not surprising, as upon leaving the prison environment the availability of drugs increases.¹³ Indeed, a study comparing drug use between incarcerated offenders and community patients revealed interesting trends:⁹ Community patients were almost twice as likely to inject drugs (84% vs. 44%) and twice as likely to use heroin (72% vs. 38%). Incarcerated offenders, on the other

hand, were more likely to borrow and lend injecting tools—due to the difficulties and risks associated with gaining access to such tools inside the prison walls. A study among drug users in Scotland,¹⁴ likewise, indicated that needle sharing in prison was far more frequent than outside prison, and that needles were shared among a wider number of people in prison. These studies nicely illustrate how the prison environment can reduce one risky activity (e.g., drug use), while increasing another type of risky behavior (e.g., sharing injecting tools).¹⁵

Financial risk taking is another domain that has received attention, and here opportunity might help explain differences in risky behavior between incarcerated offenders and ex-offenders. Greater risk taking tendencies observed among ex-offenders than incarcerated offenders suggest that opportunity to engage in risky activities may underpin risk taking differences between incarcerated offenders and ex-offenders. Using the Problem Gambling Severity Index of the Canadian Problem Gambling Index (CPGI/PGSI), Turner, Preston, McAvoy, and Gillam¹⁶ studied 422 incarcerated offenders and found that their problem gambling rates were twice as high before they were incarcerated (8.9% vs. 4.4%). Incarcerated offenders who exhibited specific gambling problems with slot machines prior to incarceration showed reduced gambling problems while in prison.¹⁷ In contrast, those with card gambling problems did not exhibit reduced gambling tendencies inside the prison. After all, cards, but not slot machines, are available in prison. A review of the literature on gambling among forensic populations revealed that “gambling in prison would appear to be somewhat less prevalent and involve less time and money than gambling outside prison” (p. 676).¹⁷

Offenders' risk taking, thus, seems to be partially driven by opportunity. Another factor that might play a part is the expected benefits and perceived risks associated with each activity. Research among nonoffenders^{18,19} and adolescents²⁰ has repeatedly shown that risk

taking is driven by the perception of the risks and benefits associated with the activity.

Examining college students' risk-taking behaviors and attitudes in a number of risk areas (health, social, and financial), Fromme, Stroot, and Kaplan²¹ found a strong relationship between the expected benefits associated with an activity (drinking alcohol) and the likelihood of engaging in the activity. Hanoch et al.¹⁸ found that what differentiates skydivers' and smokers' willingness to skydive or smoke is the expected benefit associated with the activity. Both groups rated skydiving and smoking as containing similar levels of risk, but skydivers attributed more benefits to skydiving and smokers assigned greater benefits to smoking. Taken together, the above studies nicely capture the fact that individuals are not general risk takers but tend to engage in a specific risk-taking behavior, one that they typically perceive as affording a high level of benefits. Whether incarcerated offenders and ex-offenders follow a similar behavioral pattern is an important and as yet unanswered question.

In the first study to examine domain-specific risk-taking tendencies of incarcerated offenders compared to non-offenders, Hanoch and Gummerum²² found that risk-taking activities were better predicted by the expected benefits than expected risks for both incarcerated offenders and non-offenders samples. That is, similar mechanisms seem to underlie and drive both groups' risky behavior. This study, however, showed differences in the perception of the benefits and risks between incarcerated offenders and non-offenders. Overall, incarcerated offenders rated most activities (aside from financial) as riskier than the non-offenders population; incarcerated offenders also judged all risky activities as offering fewer benefits than the non-offenders population. One possible explanation for the differences in benefit and risk perception between the two populations, argued Hanoch and Gummerum,²² rests with differences in the environment. Incarcerated offenders might be

penalized by the prison authorities or by other incarcerated offenders for engaging in certain risky activities (e.g., sexual behavior or snitching) and they tend to be constantly monitored by the prison authorities. Incarcerated offenders, moreover, might not be able to enjoy or gain the benefits associated with certain risky activities.

Given the wide spectrum of risky activities that incarcerated offenders and ex-offenders participate in (e.g., financial, health, ethical), one methodological question is what tools can be used to capture incarcerated offenders' behavioral risk intentions, their perceived benefits of risk-taking, and perceived risks. The Domain-Specific Risk-Taking Scale^{19, 23} (DOSPERT) has been one of the most successful and widely used instruments. Indeed, the DOSPERT has been utilized in a wide spectrum of studies examining behavioral risk intentions among different age groups,²⁴ among different populations¹⁸, and in different cultures.²³ The DOSPERT has also been shown to relate to real life risk taking behavior,²⁵ to be associated with different personalities,²⁶ and to be related to specific brain activity.²⁷ The DOSPERT is valuable because it can be used to examine behavioral risk intentions in five content domains (financial, health/safety, recreational, ethical, and social), as well as allow researchers to evaluate perception of the risks and benefits of activities in more than one risk domain. Moreover, the DOSPERT has already been used with incarcerated offenders²² and is easy to administer within the prison environment.

Our aims, therefore, were (i) to compare risk-taking behavior among incarcerated offenders and ex-offenders in five risk areas; (ii) to examine whether and how the prison environment affects risk-taking behavior among the two groups; and finally (iii) to evaluate whether risk-taking behavior is motivated by the expected benefits or perceived risks associated with each risk domain. That is, it is possible that being inside or outside the prison

environment determines both one's behavioral risk intentions and one's perceptions of risks and benefits.

As one of the first studies to examine this issue, our investigation had an explorative component. Yet, we did have specific predictions. First, we hypothesized that in the ethical, financial, health/safety, and recreational domains incarcerated offenders would exhibit lower risk-taking behavioral intentions compared to ex-offenders, given that their environment affords fewer opportunities for them to take risks. We remained agnostic with regard to the social domain, given the lack of previous studies and the possible influence of the environment. Second, we expected that both groups' risk-taking behavior would be motivated by the expected benefits of a risky activity. Finally, we predicted that earlier work²² would be supported with a finding of both incarcerated offenders and ex-offenders exhibiting domain-specific risk-taking.

2. METHOD

2.1. Participants

Participants were 75 sentenced adult male incarcerated offenders from a medium security prison in the United Kingdom, aged 21 to 67 years ($M_{\text{age}} = 34.84$ years, $SD = 10.39$). Fifty-seven percent were sentenced for an offense against a person (including murder, violence, and sexual assault), 35% for crimes not against a person (drugs, burglary), and 8% for other offenses. Eighteen percent of incarcerated offenders indicated finishing primary school as their highest educational achievement, 28% obtained the General Certificate of Secondary Education (GCSE), 3% obtained A-levels, 3% obtained a diploma or a degree, 5% engaged in vocational training, and 44% indicated that they left education without any formal degree.

The comparison sample of ex-offenders consisted of 45 males from the United Kingdom, recruited from an organization (Friends on the Outside [FOTO]) whose purpose is to assist newly released offenders in adjusting to their life outside prison. The ex-offenders were all within 16 weeks from their prison release. Unlike in the U.S., released offenders in the UK are not necessarily monitored or supervised, and they are not obliged to report to any agency on a regular basis. Ex-offenders ranged in aged 21 to 58 years ($M_{\text{age}} = 39.02$ years, $SD = 8.57$). Fifty-six percent of ex-offenders were sentenced for an offense against a person, 36% for crimes not against a person, and 9% of offenses could not be classified. Eighteen percent of ex-offenders indicated that they finished primary school as their highest educational attainment, 22% achieved GCSEs, 0% obtained A-levels, 13% obtained a diploma or a degree, 16% received vocational training, and 31% indicated that they left education without any formal degree.

An independent samples t test indicated that ex-offenders were significantly older than incarcerated offenders, $t(117) = -2.24$, $p = .03$, $d = .41$. Incarcerated offenders and ex-offenders did not differ in terms of offense type, $\chi^2(2, N = 120) = .05$, $p = .98$, or educational attainment, $\chi^2(5, N = 84) = 7.36$, $p = .20$.

2.2. Materials

The DOSPERT for adult populations²³ comprises 30 items divided into five risk domains (social, recreational, financial, health/safety, ethical) containing 6 items each (e.g., revealing a friend's secret; going whitewater rafting at high water; betting at the horse races; sunbathing without sunscreen; revealing a friend's secret to someone else, respectively). For each item, participants indicated (1) their likelihood of engaging in the risky activity (risk taking), (2) how risky they perceived the activity to be (risk perception), and (3) how much benefit they would expect to gain from participating in the activity (risk benefit). All answers

were made on a 7-point Likert scale ranging from 1 (*extremely unlikely*) to 7 (*extremely likely*) for the questions regarding the likelihood of engaging in a risky activity, 1 (*not at all risky*) to 7 (*extremely risky*) for how risky they perceived each situation to be, and 1 (*not beneficial at all*) to 7 (*extremely beneficial*) for how much benefit they thought they would obtain from each situation. Higher values indicated greater chance of risk taking, risk perception, and risk benefit. Cronbach's alphas for the risk-taking scales were $\alpha = .77, .86, .67, .81,$ and $.81$ (for the social, recreational, financial, health/safety, ethical subscales, respectively); Cronbach's alphas for the risk-perception scales were $\alpha = .79, .81, .84, .79,$ and $.80$ (for the social, recreational, financial, health/safety, ethical subscales, respectively), Cronbach's alphas for the risk benefit scales were $\alpha = .63, .86, .85, .80,$ and $.73$ (for the social, recreational, financial, health/safety, ethical subscales, respectively).

2.3. Procedure

The study protocol was approved by the University institutional board, the prison establishment, and the participating Institution. Incarcerated offenders were approached and asked to participate in the study. They were told that participation was voluntary and anonymous and that they would incur no negative consequences as a result of participating (or not). Furthermore, they were told that the data would be used for research purposes only. Incarcerated offenders who agreed to participate were tested individually in a designated room where they were provided with both oral and written instructions about the DOSPERT. At all times, one of the research assistants was present in the room to address any possible questions. The ex-offenders were contacted through FOTO, an outreach organization in the southwest of the UK and were tested in the organization's premises. Ex-offenders were paid £8 (in vouchers) for their participation in a larger study, with risk taking being part of it. As with the incarcerated offenders, ex-offenders who agreed to participate were tested

individually in a designated room where they were provided with both oral and written instructions about the DOSPERT. At all times, one of the research assistants was present in the room to address any possible questions.

3. RESULTS

3.1. Behavioral Risk Intentions

To study behavioral risk intentions across domains, we examined the differences in the mean behavioral risk intentions in each domain for incarcerated offenders and ex-offenders.¹ A 2 (subsample: incarcerated offenders, ex-offenders) \times 5 (domain: social, recreational, financial, health/safety, ethical) repeated measures analysis of variance (ANOVA) with the between-subjects variable subsample and the within-subject variable domain indicated a significant interaction effect of Domain \times Subsample, $F(4, 121) = 2.67, p = .03, \eta_p^2 = .02$, and significant main effects of domain, $F(4, 121) = 74.80, p < .001, \eta_p^2 = .39$, and subsample, $F(1, 121) = 4.10, p = .05, \eta_p^2 = .03$.

To explore the interaction effect between domains and subsamples, we first conducted a repeated measures ANOVA with the within-subject variable domain separately for each subsample. For incarcerated offenders, behavioral risk intentions significantly differed by domain, $F(4, 76) = 54.51, p < .001, \eta_p^2 = .42$. Post-hoc pairwise comparisons (with Bonferroni adjustment for multiple comparisons) showed that incarcerated offenders exhibited significantly higher behavioral risk intentions in the social compared to all other domains (all $ps < .01$) and significantly lower behavioral risk intentions in the ethical compared to all other domains (all $ps < .01$). Behavioral risk intentions in the recreational domain were significantly higher than all other domains except the health domain (all $ps < .01$). Behavioral risk intentions in the financial domain were significantly higher than in the health domain ($p < .01$; see Table 1, Figure 1a). For ex-offenders, the repeated-measures

ANOVA revealed a significant effect of domain, $F(4, 45) = 28.91, p < .001, \eta_p^2 = .40$. Post-hoc pairwise comparisons (with Bonferroni adjustment for multiple comparisons) revealed that ex-offenders showed significantly higher behavioral risk intentions in the social compared to all other domains except for the recreational domain (all $ps < .01$) and significantly lower behavioral risk intentions in the financial and ethical domain than all other domains (all $ps < .01$). Behavioral risk intentions in the health/safety domain did not differ in the recreational and health domain ($p > .50$; Table 1, Figure 1a).

Second, we conducted independent samples t tests for each domain separately (adjusted $\alpha = .01$). Ex-offenders took significantly greater risks than incarcerated offenders in the recreational, $t(106.20) = -3.12, p = .001, d = .61$ and ethical domains, $t(119) = -3.26, p = .001, d = .60$, whereas there was no significant difference in risk taking in the other three domains (see Table 1 for means).

The differences in behavioral risk intentions between ex-offenders and incarcerated offenders could be due to the fact that offenders in prison could simply not engage in some of the risky activities endorsed, particularly in the recreational domain (e.g., “going camping in the wilderness”). To further explore subsample differences in behavioral risk intentions separate independent samples t tests were run for each of the six items in the recreational and ethical domains, respectively. In the recreational domain, ex-offenders showed significantly higher behavioral risk intentions ($M = 4.82, SD = 2.15$) than incarcerated offenders ($M = 3.79, SD = 2.22$) for the item “piloting a small plane”, $t(119) = -2.50, p = .01, d = .47$. Furthermore, ex-offenders exhibited marginally higher behavioral risk intentions than incarcerated offenders for the items “taking skydiving classes” ($M_{exoffenders} = 4.76, SD = 2.01$; $M_{incarcerated} = 3.96, SD = 2.27$), $t(101.74) = -2.00, p = .05, d = .37$ and “going whitewater rafting” ($M_{exoffenders} = 4.38, SD = 2.10$; $M_{incarcerated} = 3.62, SD = 2.14$), $t(119) = -1.90, p = .06$,

$d = .36$. No other significant subsample differences emerged (all $ps > .12$). In the ethical domain, ex-offenders showed significantly higher behavioral risk intentions than incarcerated offenders for the items “not returning a wallet found that contains £200” ($M_{exoffenders} = 5.11$, $SD = 2.16$; $M_{incarcerated} = 3.63$, $SD = 2.17$), $t(118) = -3.63$, $p = .001$, $d = .69$, and “having an affair with a married person” ($M_{exoffenders} = 4.36$, $SD = 1.90$; $M_{incarcerated} = 3.01$, $SD = 2.76$), $t(117) = -3.92$, $p = .001$, $d = .75$. No significant subsample differences emerged for the other items in the ethical domain (all $ps > .21$).

3.2. Risk Perception

Concerning risk perception, a 2 (subsample: incarcerated offenders, ex-offenders) \times 5 (domain: social, recreational, financial, health/safety, ethical) repeated measures ANOVA with the between-subjects variable subsample and the within-subject variable domainⁱ found a significant interaction effect of Domain \times Subsample, $F(4, 121) = 2.93$, $p = .02$, $\eta_p^2 = .02$, and significant main effect of domain, $F(4, 121) = 77.80$, $p < .001$, $\eta_p^2 = .40$.

To further explore the interaction effect, we first conducted a repeated measures ANOVA with the within-subject variable domain separately for each subsample. Incarcerated offenders' risk perception differed significantly by domain, $F(4, 76) = 50.90$, $p < .001$, $\eta_p^2 = .40$. Post-hoc pairwise comparisons (with Bonferroni adjustment) revealed that incarcerated offenders perceived significantly less risks in the social compared to all other domains (all $ps < .01$). Incarcerated offenders' risk perception in the recreational, financial, health, and ethical domains did not differ significantly from each other (all $ps > .40$; Table 1, Figure 1b). Ex-offenders' risk perceptions also significantly differed by domain, $F(4, 45) = 34.42$, $p < .001$, $\eta_p^2 = .44$. Post-hoc pairwise comparisons (with Bonferroni adjustment) showed that ex-offenders perceived significantly less risks in the social compared to all other domains (all $ps < .01$) and significantly less risks in the recreational compared to the financial domain ($p <$

.01). Risk perception in the financial, health, and ethical domain did not significantly differ from each other (all $ps > .13$, Table 1, Figure 1b). Second, we conducted independent samples t tests for each domain separately (adjusted $\alpha = .01$). Incarcerated offenders' risk perception tended to be higher than that ex-offenders' in all domains (see Table 1), but these differences did not reach statistical significance.

3.3. Risk Benefits

We next evaluated participants' perceptions of the benefits associated with each risky activity.¹ A 2 (subsample: incarcerated offenders, ex-offenders) \times 5 (domain: social, recreational, financial, health/safety, ethical) repeated measures ANOVA with the between-subjects variable subsample and the within-subject variable domain revealed a significant interaction effect of Domain \times Subsample, $F(4, 121) = 3.77, p = .01, \eta_p^2 = .03$, and a significant main effect of domain, $F(4, 121) = 61.94, p < .001, \eta_p^2 = .34$.

Concerning the interaction effect of domain by subsample, a repeated-measures ANOVA revealed significant main effect of domain for incarcerated offenders, $F(4, 76) = 31.84, p < .001, \eta_p^2 = .30$. Post-hoc pairwise comparisons (with Bonferroni adjustment) revealed that incarcerated offenders attributed significantly more benefits to risk taking in the social compared to all other domains (all $ps < .01$), and significantly less benefits to risk taking in the health domain compared to all other domains (all $ps < .01$), except the ethical domain. Incarcerated offenders attributed significantly less benefits to risk taking in the ethical than the recreational or financial domain (all $ps < .01$; see Table 1, Figure 1c). For ex-offenders, a repeated measures ANOVA revealed a significant main effect of domain, $F(4, 45) = 30.65, p < .001, \eta_p^2 = .41$. Post-hoc pairwise comparisons (with Bonferroni adjustment) showed that ex-offenders attributed significantly more benefits to risk-taking in the social and recreational domain than to all other domains (all $ps < .01$). Ex-offenders attributed the least

benefits to risk taking in the health domain, which differed significantly from benefits attributed to risk taking in all other domains, except the financial domain (all $ps < .01$; Table 1, Figure 1c). Independent samples t tests, conducted separately for each domain (adjusted $\alpha = .01$) revealed no significant differences in the attribution of benefits by incarcerated and ex-offenders.

3.4. Risk-Taking Attitude: A Trade-Off Between Benefits and Risks

Previous studies using the DOSPERT^{18,19} found overall that risky behavior of non-offender populations is better predicted by participants' perceptions of the expected benefits associated with behavioral risk intentions than by their perceptions of risk. Here, we investigated whether incarcerated offenders' and ex-offenders' behavioral risk intentions would follow similar patterns. For each risk domain, we ran a hierarchical linear regression analysis to explore the role of perceived risks and expected benefits in behavioral risk intentions. According to Cohen, Cohen, West, and Aiken,²⁸ entering independent variables into a regression model in a hierarchical order is justified when some (groups of) variables are seen as theoretically prior to others. As indicated in predictions one and two, we expected subsample differences in behavioral risk intentions and anticipated that expected benefits would be better predictors of behavioral risk intentions than perceived risks. Therefore, we entered the independent variables perceived risks, expected benefits, and subsample (incarcerated offenders, coded as -0.5; ex-offenders, coded as 0.5) at Step 1. Since perceived risks and expected benefits could differ by subsample, we additionally the interaction terms Perceived Risks \times Subsample and Expected Benefits \times Subsample in Step 2.ⁱⁱ This was done to investigate (in an exploratory way) whether these interactions significantly predict behavioral risk intentions above and beyond the predicted main effects. Interaction terms were created by calculating the product of the mean-centered main effects.²⁹

As shown in Table 2, benefits associated with risk taking and risk perception significantly predicted behavioral risk intentions in the social, $R^2 = .44$, $F(5, 121) = 16.21$, $p < .01$, recreational, $R^2 = .47$, $F(5, 121) = 22.49$, $p < .01$, and financial, $R^2 = .28$, $F(5, 121) = 10.49$, $p < .01$, domains. In these three domains, the expected benefits of risk taking positively and significantly predicted behavioral risk intentions, whereas the standardized coefficients for perceived risks negatively and significantly predicted behavioral risk intentions. Furthermore, the absolute value of the coefficients was larger for the expected benefits than for perceived risks, indicating that the expected benefits of a risky action might be a more important determinant of whether to engage in that action than the perceived risks. No subsample differences emerged for behavioral risk intentions in the social, recreational, and financial domains.

In the health/safety domain, only perceived risks negatively and significantly predicted behavioral risk intentions, $R^2 = .26$, $F(3, 121) = 13.89$, $p < .01$. Furthermore, the interaction between expected benefits and subsample significantly predicted behavioral risk intentions in the health/safety domain. However, regression model 2, which included the variables expected benefits, perceived risks, and subsample as well as the interaction terms of Perceived Risks \times Subsample and Expected Benefits \times Subsample did not lead to a significant change in R^2 compared to regression model 1, which only contained the independent main effects of perceived risks, expected benefits, and subsample, $\Delta R^2 = .03$, $\Delta F(2, 121) = 2.23$, $p = .11$. Therefore, the interaction of expected benefits and subsample was not further investigated.

The regression analysis for behavioral risk intentions in the ethical domain indicated that the independent variables significantly predicted risk taking, $R^2 = .39$, $F(5, 121) = 16.29$, $p < .01$. Expected benefits were positively and significantly related to behavioral risk

intentions, whereas risk perception was negatively and significantly related to behavioral risk intentions. Overall, incarcerated offenders intended to take significantly fewer risks in the ethical domain than ex-offenders.

4. DISCUSSION

4.1. Incarcerated Offenders' and Ex-offenders' Risk Taking Propensity

Crime exerts an enormous financial and social cost. Understanding the links between risk taking and crime has been of interest to law enforcers, and academics alike. Indeed, prison authorities and probation services have invested considerable resources in trying to modify offenders' risk-taking behavior. Yet, little attention has been devoted to the question of whether being inside or outside the prison walls alters criminals' risk-taking behaviors and risk attitudes. By comparing incarcerated offenders with ex-offenders, we show that incarcerated offenders and ex-offenders do differ with regard to their behavioral risk intentions. Ex-offenders, as predicted, reported higher likelihood of engaging in risky behavior, driven largely by a willingness to take more risks in the recreational and ethical domains.

One of the pillars of the general theory of crime³ is the notion of opportunity. In line with the theory's assumptions, our findings nicely capture the importance of opportunity, as ex-offenders, compared to incarcerated offenders, reported higher risky behavior in the ethical and recreational domains. Furthermore, our data reveals that ex-offenders and incarcerated offenders did not differ in their risk perception or risk benefit but only in their behavioral risk intentions. Thus, differences in behavioral risk intention cannot be explained by differences in risk or benefit perception, but by reference to another factor: in our case, opportunity. With regard to the recreational domain, these findings are not surprising, given that incarcerated offenders cannot engage in any of the activities raised in the DOSPERT

(e.g., piloting a small plane, taking a skydiving class). Ex-offenders, on the other hand, have the opportunity to participate in any or all of the recreational activities covered by the DOSPERT, as they are not confined by the prison environment. Thus the recreational domain is probably the risk domain where one would expect differences between the two groups. The question, then, of whether offenders are recreational risk takers depends, at least partially, on whether they are inside or outside the prison environment. That being said, other constraints—such as financial—might reduce the probability of incarcerated offenders engaging in recreational activities included in the DOSPERT.

Probably most significant with regard to Gottfredson and Hirschi³ is the finding that ex-offenders showed higher behavioral risk intentions in the ethical domain—a domain in the DOSPERT that is most closely linked to criminal behavior. These results address two important elements related to the role of the environment in affecting risky behavior. First, as in the recreational domain, ex-offenders clearly have more possibilities to engage in many of the activities associated with the ethical domain—such as having an affair with a married man/women. Second, in contrast to ex-offenders, incarcerated offenders are constantly monitored and thus any ethical violations are more likely to be noticed and also carry a much heavier cost. Furthermore, snitching on another inmate might render an incarcerated offender as a “rat” or an informant; it is also more likely to expose the identity of an informant inside the prison compare to being outside the prison. Thus, Hanoch and Gummerum’s²² findings that incarcerated offenders and non-offenders exhibit similar ethical risk-taking proclivities could be an expression of the incarcerated offenders’ present situation rather than of their true risk-taking tendencies.

Our results did not show differences in risk-taking tendencies between incarcerated offenders and ex-offenders in the financial, health/safety, and social domains. In a recent

study we compared risk taking of ex-offenders and incarcerated offenders within a risky choice framework and found that ex-offenders made riskier choices overall compared to incarcerated offenders.⁵ However, we discovered that the ex-offenders were typically more risk seeking in situations that involved avoiding a sure loss. The financial items of the DOSPERT are framed positively in terms of investment and gambling of one's salary. Thus, our current findings support the idea that risk taking differences between ex-offenders and incarcerated offenders in financial contexts may be most apparent when they concern a potential loss. A number of earlier studies reported differences in gambling prevalence between incarcerated offenders and ex-offenders, and some studies have reported high prevalence of gambling within the prison setting. Following an in-depth interview with 55 incarcerated offenders, McEvoy and Spirgen³⁰ concluded that gambling is common among incarcerated offenders and represents a key feature of the underground economy of prisons. Indeed, ample opportunities to gamble exist within the prison environment for those who seek it.¹⁷ In addition, a number of researchers^{30,31} argued that prison authorities do little to prevent this activity or introduce prevention programs. Given the high prevalence of gambling among incarcerated offenders and the lack of prevention programs or punitive measures in prisons, our results might represent the fact that offenders' financial risk taking does not change during the time spent in prison. Finally, as both incarcerated offenders and ex-offenders had little to no earnings, their capacity to take financial risks was reduced. Indeed, financial worries represent one of the most serious stressors for released offenders, as many lack employment, social support, and funds provided by the authorities are often minimal.

Although ex-offenders reported slightly higher behavioral risk intentions in the health/safety domain, the differences were not significant. First, a number of the questions in

the DOSPERT might not pose health or safety risks to this specific population. Indeed, many incarcerated offenders or ex-offenders might not be “afraid to walk at night alone in an unsafe area of town.” Second, Hanoch and Gummerum²² found that incarcerated offenders' risk-taking activity was significantly higher compared to non-offenders only in the health/safety domain. As such, it is possible that our results also represent a ceiling effect. Finally, evidence indicates that alcohol and drug use remain high in prison (even if reduced) and that prisons might even serve as a high-risk setting for drug initiation and use.³²

Finally, our results showed no differences in risk-taking tendencies in the social domain. One possible reason is that the environmental structure exerts little influence on the risk tendencies of both incarcerated offenders and ex-offenders. Indeed, being inside or outside the prison environment might have little impact on whether one is willing to admit that one's tastes are different from those of friends or to speak one's mind about an unpopular issue. These results might further substantiate our basic idea regarding the role of the environment in risk-taking behavior.

4.2. Risk-taking Propensity: A Trade-off of Benefits and Risks

One of the advantages of the DOSPERT rests with its ability to capture the relationship between perceived risks, expected benefits, and risky behavior. In line with earlier studies, our data show that in most domains behavioral risk intentions driven by the expected benefits and to a lesser degree by the perceived risks associated with the activities. Indeed, in the ethical, financial, recreational, and social domains, both incarcerated offenders' and ex-offenders' expectations of the benefits associated with risk taking appear to have been more influential in driving risky behavior than the perceived risks. Our findings are in line with Levitt and Venkatesh's³³ work, which revealed that gang members are very much aware

of the high risks associated with their activities, but their perception of the potential benefits associated with becoming the gang leader trump these risks.

As in earlier work^{18,19} our data indicate that expected benefits, rather than perceived risks, may be the main factor in predicting both incarcerated offenders' and ex-offenders' risk-taking behavior. Hence, to alter this population's risky behavior, prison and probation authorities should focus on reducing incarcerated offenders' and ex-offenders' positive expectations about a risky activity rather than highlighting the risks. There is, however, one exception. The health/safety domain was the only one in which risky behavior was largely driven by the risk perception rather than the risk benefit.²² Thus, in the health/safety domain, prevention programs (e.g., targeting drug and alcohol abuse) both inside and outside the prison environment should focus on the risks associated with engaging in health-related activities as well as diminishing the expected benefits associated with these activities.

The result that perceived benefits are more predictive of risky behavior than perceived risks has not just been found in our study, but also for other domains or risk taking, such as the acceptance of new technologies or products. While the public's perception and understanding of benefits and risk is a complex one,³⁴ there is evidence to suggest that willingness to accept a wide range of new (risky) technologies and products—ranging from gene technology,³⁵⁻³⁶ mobile phones,³⁷ nanotechnology,³⁸ and nuclear power and energy³⁹⁻⁴⁰—is driven by the public's perception of the benefits (and to a lesser degree by the risk perception) associated with these products or technologies.

4.3. Conclusion

Herbert Simon's⁴ work on rationality and decision making coupled with Gottfredson and Hirschi's³ ideas about criminal behavior gain further support in our study. The results of this first investigation to compare risk-taking behavior among similar offender populations—

one inside prison and one outside—emphasize the importance of the environment in risk-taking behaviors and risk attitudes in some risk domains. Three important themes emerge. First, an earlier comparison of incarcerated offenders and non-offenders populations²³ might have failed to provide an accurate representation (largely underestimating) of offenders' risk-taking behavior, as incarcerated offenders' risk-taking tendencies might be reduced by being behind bars. Second, our work further substantiates the need to study both people and the environment in which they operate. Finally, our results further highlight the need to examine risk-taking behavior in a number of content areas or domains (and not just the financial), as well as to evaluate the link between risk attitude and risky behavior. Given the complexity of criminal behavior, it is clear that risk-taking tendencies are only part of the picture. However, a better understanding of offenders'—whether they are in prison or outside—risk-taking behaviors and attitudes could serve as an important part of the puzzle.

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FOOTNOTES

ⁱ Preliminary analyses examined differences in the mean behavioral risk intentions, perceptions of risk, and risk benefits in each domain for incarcerated offenders and ex-offenders while controlling for offense type, education, and age. A repeated measures analysis of covariance (ANCOVA) was run for the dependent variables mean behavioral risk intentions, risk perception, and risk benefit, respectively. Each repeated measures ANCOVA included the between-subjects variables subsample (incarcerated offenders, ex-offenders), offense type (against person, not against person), and education (no education, primary school, GCSE, A-levels, diploma/degree, vocational training), the within-subject variable domain (social, recreational, financial, health/safety, ethical), and the covariate age. None of the main or interaction effects including the variables offense type, education, or age reached statistical significance (results available upon request).

ⁱⁱ In addition to the regression reported in the text, we additionally ran hierarchical linear regressions predicting behavioral risk intentions in each domain while controlling for offense type, education and age. At Step 1, we entered the independent variables offense type, education, and age. At Step 2, we additionally entered the independent variables perceived risks, expected benefits, and subsample. At Step 3, we additionally entered the interaction terms of Perceived Risks \times Subsample and Expected Benefits \times Subsample. In none of the regression models did the control variables significantly predict behavioral risk intentions (results available upon request).

Table I

Mean Scores (and Standard Deviations) on the DOSPERT Subscales Behavioral Risk Intentions, Risk Perception, and Risk Benefit for Incarcerated offenders and Ex-offenders

Population	Subscale (risk-taking domain)				
	Social	Recreational	Financial	Health/safety	Ethical
	Behavioral risk intentions ^a				
Incarcerated offenders	4.92 (1.34)	3.81 (1.77)	3.18 (1.16)	3.94 (1.58)	2.75 (1.17)
Ex-Offenders	5.13 (0.96)	4.46 (1.33)	3.14 (1.15)	4.34 (1.26)	3.42 (0.97)
Combined	4.99 (1.21)	4.06 (1.65)	3.17 (1.15)	4.09 (1.48)	3.00 (1.14)
	Risk perception ^a				
Incarcerated offenders	3.17 (1.30)	4.61 (1.27)	4.60 (1.31)	4.87 (1.24)	4.83 (1.06)
Ex-offenders	3.08 (1.09)	4.16 (1.18)	4.92 (1.08)	4.69 (1.11)	4.71 (1.04)
Combined	3.14 (1.22)	4.44 (1.25)	4.72 (1.24)	4.80 (1.19)	4.79 (1.05)
	Risk benefit ^a				
Incarcerated offenders	3.53 (1.12)	2.99 (1.43)	2.81 (1.31)	2.03 (1.12)	2.38 (1.19)
Ex-offenders	3.94 (0.79)	3.64 (1.54)	2.64 (1.25)	1.96 (0.94)	2.57 (0.89)
Combined	3.67 (1.03)	3.23 (1.50)	2.74 (1.29)	2.01 (1.06)	2.45 (1.09)

^aAnswers were made on a 7-point Likert scale ranging from 1 (*extremely unlikely*) to 7

(*extremely likely*) for the questions regarding behavioral risk intentions; 1 (*not at all risky*) to

7 (*extremely risky*) for questions regarding risk perception; and 1 (*not beneficial at all*) to 7 (*extremely beneficial*) for questions regarding risk benefit.

Table II

Results of Regression Analyses Predicting Behavioral Risk Intentions in Five Domains

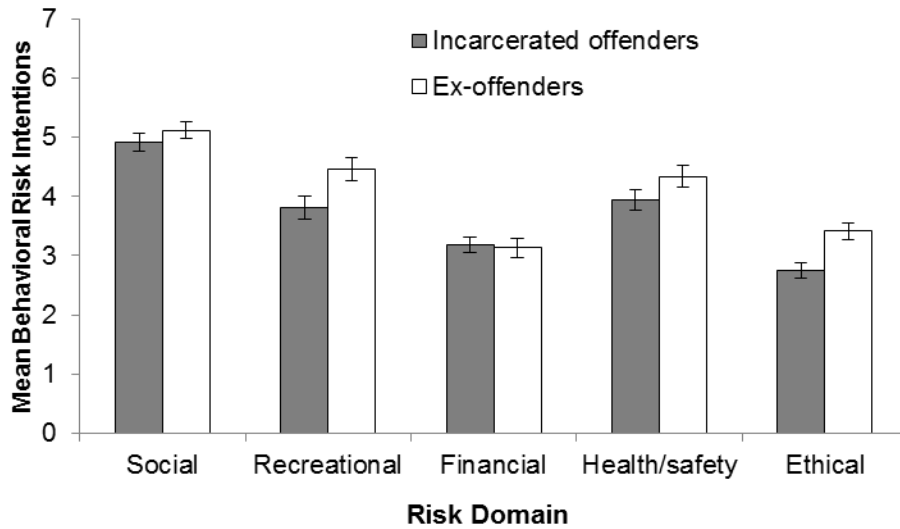
Independent variables	Risk domain									
	Social		Recreational		Financial		Health/safety		Ethical	
	β	$\Delta R^2, \Delta F,$ $df1, df2, p$	β	$\Delta R^2, \Delta F,$ $df1, df2, p$	β	$\Delta R^2, \Delta F,$ $df1, df2, p$	β	$\Delta R^2, \Delta F,$ $df1, df2, p$	β	$\Delta R^2, \Delta F,$ $df1, df2, p$
		.45, 32.38, 3, 117, .001		.48, 37.85, 3, 117, .001		.28, 16.52, 3, 117, .001		.26, 13.89, 3, 117, .001		.40, 27.10, 3, 117, .001
Benefits	.56**		.61**		.42**		.16 [†]		.43**	
Risk perception	-.24**		-.18*		-.30**		-.41**		-.25**	
Subsample	.03		-.03		-.05		-.11		-.24**	

Note. Subsample coded as -0.5 (incarcerated offenders) and 0.5 (ex-offenders).

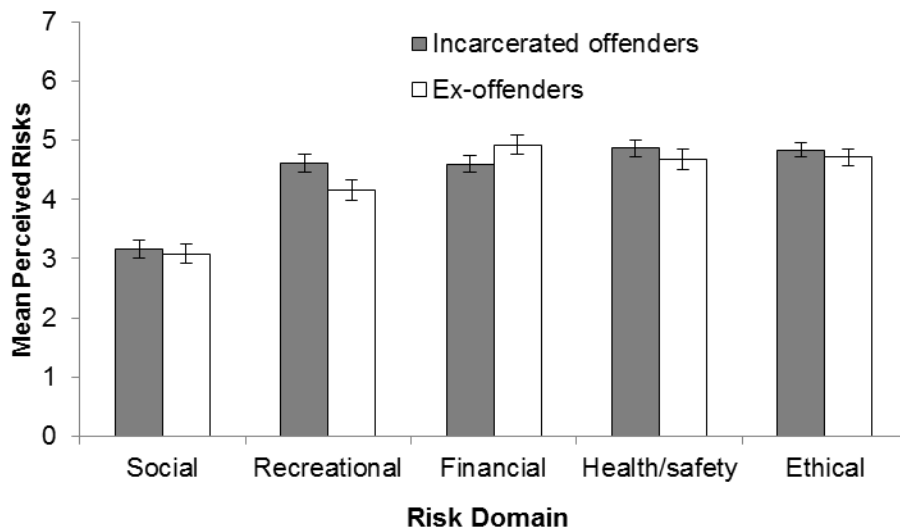
[†] $p < .10$. * $p < .05$. ** $p < .01$.

Figure 1. Mean Scores of (a) Behavioral Risk Intentions, (b) Risk Perception, and (c) Risk Benefit for Incarcerated offenders and Ex-offenders by Risk Domain (Error Bars display Standard Error)

(a)



(b)



(c)

