

A Comparison of Students' Perception of Criminal Justice-Related
Risks with Other Societal Risks

By

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A thesis submitted to the faculty of Graduate Studies and Research in
partial fulfillment of the requirements of the
degree of Masters of Arts in Psychology

Department of Psychology

Carleton University

Ottawa, Ontario, Canada

August 2006

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Your file *Votre référence*
ISBN: 978-0-494-18265-9
Our file *Notre référence*
ISBN: 978-0-494-18265-9

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Abstract

To better understand the perception of risk of crime, a replication of the three factor structure of Dread risk, Unknown risk and Number of People Exposed of societal risks delineated by Slovic, Fischhoff and Lichtenstein (1980) was undertaken. Twelve societal hazards and five criminal justice hazards were examined. A two factor structure resulted, with Factor 1 best described as Dread risk and Factor 2, Uncertainty. Criminal justice hazards were predominantly located in the high Factor 1, low Factor 2 quadrant of the two Factor space. Results confirm that people tend to overestimate the rate of crime; however, their estimates are not related to dread risk, uncertainty or perceived risk. An awareness of risks and benefits of releasing offenders is not related to perception of risk of criminal justice hazards. Being a victim of crime was not found to affect perceived risk, dread risk or uncertainty of crime. Gender differences in perception were observed.

ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to Dr. Jeremy Mills, whose guidance, encouragement, and patience was invaluable. I wish to thank Dr. Don Andrews for the opportunity to work under his supervision and for piquing my interest in criminal justice many years ago. I am also thankful to my committee members; Dr. Ralph Serin and Dr. Craig Bennell for their constructive feedback and their enthusiasm for my thesis topic, and to my external examiner, Dr. Aaron Doyle, for his interest in my thesis and his helpful comments.

I must also express a most heartfelt thank you to my supervisor at Kingston Penitentiary, Dr. Wagdy Loza, whose encouragement and enthusiasm were the catalyst for my pursuing this degree. Thank you to Ms. Anita Cumbleton who provided ongoing editing services and writing expertise. I wish to gratefully acknowledge my colleagues at Kingston Penitentiary for their support and advice (Ms. Petrina Lemieux, Dr. Gosia Knap, Dr. Gurmeet Dhaliwal). Thank you to my editors, Dr. Dorothy Cotton and Dr. Daryl Kroner.

Most importantly, thank you to my family, to my mother for her encouragement, and to my father for his support of all things academic. My greatest appreciation goes to my partner in life, Clint Wills, for his love and support and taking over many duties so that I may study, and to the love of my life, my son, Ewan, whose presence puts everything in perspective.

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Introduction

Why are people's perceptions of criminal justice-related risks important?

Information contained in risk assessments contributes to many different types of decisions within the correctional and forensic mental health systems, perhaps the most important of which is to detain offenders/patients or to release these individuals to the community. The field of risk assessment research has made considerable strides, from assessments based primarily on clinical judgement to empirically-derived and empirically-supported measures to predict violent, sexual, or general recidivism. Assessment tools such as the Level of Service Inventory - Revised (LSI-R; Andrews & Bonta, 1995) and the Psychopathy Checklist – Revised (PCL-R; Hare, 1990), whose reliability and validity have been extensively established (see for example Bonta, 1989; Bonta & Motiuk, 1992; Coulson et al., 1996, Hare, 1998, Loza & Simourd, 1994, and Salekin, Rogers, & Sewell, 1996), are just two examples of a host of widely accepted and employed risk assessment measures.

The development of knowledge of criminal risk assessment began in the early 20th century. In 1923, Hornell Hart (1923) suggested that decisions made by parole boards could be improved by statistically analyzing the differences between violators of parole and non-violators to produce actuarial scores associated with varying probabilities of violating parole. Presenting case information to the board in terms of actuarial scores could improve the accuracy of decisions to release offenders. Hart further suggested that this information could be useful not only prior to release, but also at the time of sentencing. Burgess (1928) examined more than 30,000 parolees and found 21 factors (for example, prior work record) that differentiated those who were

successful on parole from those who failed. Burgess applied one point per item in his actuarial assessment of offenders. Seventy-six percent of offenders scoring the maximum number of points re-offended. Those with the lowest number of points had a recidivism rate of 1.5 percent. Initially, narrative reviews and more recently meta-analyses have consistently shown that actuarial methods of risk assessment outperform clinical assessment (for example, Bonta, Law, & Hanson, 1998).

Risk assessments possess no intrinsic value; their value is acquired through their ability to influence decisions made by those who use the risk assessments (adapted from Murphy, 1993, as cited in Monahan & Steadman, 1996). The ultimate goal of risk assessments is to warn the appropriate agencies of the risk posed by an individual so that the necessary actions may be taken to protect others. However, while research focused on improving the accuracy of risk assessment tools is extensive, there is little research into how the results from actuarial risk assessments are cited, understood or used. Risk assessment researchers have observed that improvements in the accuracy of risk prediction measures “will not yield a comparable improvement in risk-related decision-making unless communication is effective... Improper risk communication can render a risk assessment that was otherwise well-conducted completely useless or even worse than useless, if it gives consumers the wrong impression” (Heilbrun, Dvoskin, Hart, & McNiel, 1999, p. 94).

Risk communication research thus far has been limited to the different forms of violence risk communication used and studies of clinicians’ preferences (for example, Heilbrun, O’Neill, Strohmman, Bowman, & Philipson, 2000; and Heilbrun, Philipson, Berman & Warren, 1999). The results of these studies suggest that the most valued form

of risk communication was management-oriented, that is identifying risk factors applicable to the patient/offender and specifying interventions to reduce that risk, when compared with prediction-oriented communication. There was an expressed preference for this style of communication in high risk cases when compared with lower risk cases, as well as a tendency to use this style in such cases. While this line of study is important, it does not speak to the practical application of violence risk information; in what way is violent risk information being incorporated in risk decisions.

Consumers of violence risk assessments range from the public to decision-makers within the correctional and forensic mental health systems, including the National Parole Board and provincial psychiatric review boards. Tversky & Kahneman (1981, p.457) noted that “the susceptibility to perspective effects is of special concern in the domain of decision-making because of the absence of objective standards...”. The public’s perception of risk should be an important consideration in the communication and management of risk in the correctional and forensic mental health arena. The public is inherently involved in assuming the risk of releasing offenders to the community, and risk is often communicated to the public via the media. Risk perception research has compared the public’s interpretation of risk with that of experts and it appears that different factors contribute to their respective definitions of risk, such as technical estimates of annual fatalities for the activity, technology or substance of interest, and potential for disaster (Slovic, 1987). Such factors affect their relative perceptions of risk. In terms of their cognitive processing, however, research suggests that experts are as susceptible as lay people to the misapplication of heuristics or cognitive shortcuts (MacGregor, Slovic, & Malmfors, 1999; Nisbett & Ross, 1980; and Slovic, Fischhoff, &

Lichtenstein, 1980), which can lead to conclusions not intended by the risk assessor. In order to improve the practical use of criminal risk assessment instruments and improve our understanding of what constitutes effective risk communication, we need to understand how the language of risk assessment is understood and perceived versus what is intended by the expert conducting the risk assessment. “Even when statistical data are plentiful, the “hard” facts can only go so far.... At some point, human judgment is needed to interpret the findings and determine their relevance” (Slovic, Fischhoff, & Lichtenstein, 1982, p. 463).

With new laws emerging that require the notification of communities when a convicted sex offender is released to that community, the importance of effective risk communication to the public is apparent. The communication of such risk is not intended to create pandemonium; however, without the proper care taken, such information could do so. The release of a sex offender usually results in anxiety and fear; thus a thorough understanding of the public’s perception of the risk communication could assist/inform the public as to necessary and appropriate precautions to be taken. Information regarding the perception of risk of releasing offenders can also inform lawmakers about the relevant information to be considered, such as the cost benefit analysis of releasing this information to the public. This information would be useful before drafting legislation around mandatory notification and can better inform those communicating the risk an offender poses when being released to the community.

Risk communication and risk perception are important pieces of the larger picture concerning criminal and especially violent behaviour. The results of an American national symposium on risk communication concluded that agencies should

strive to understand and be sensitive to social and cultural differences and how they affect perceptions of risk and public institutions in the context of risk communication (Chess, Salomone, Hance, & Saville, 1995). The value of greater community involvement was identified during this symposium, highlighting the importance of the public in the management of risks. Practitioners and academics identified how laypeople process risk communication messages as among the most important pursuits within the field of risk communication (Chess, Salomone, & Hance, 1995). Moderate support was garnered for building a theoretical model of risk perception and risk communication that adequately deals with the complexity of the real world. In order to reach the public in risk communication efforts, their perceptions of risk need to be better defined and understood. If we wish to decrease the incidence of expensive or even lethal actions (for example, capital punishment) that are not necessary, poorly informed, inaccurate and exaggerated, risk communications must be replaced with more accurate risk assessment communications (Heilbrun, Dvoskin, Hart, & McNiel, 1999).

What do we know about people's perceptions in general?

Risk information that results from risk assessment measures must be interpreted and presented by the risk assessor, and the results of this must be understood by the receiver of the risk information. This process allows for the subjective interpretation of risk information at two steps in the process. To understand people's perceptions of risk, an examination of the cognitive processes that people use to simplify and make sense of the world is necessary. Lay people and experts alike use psychological processes that are a fundamental part of how we understand language (MacGregor et al., 1999).

Qualitative and quantitative assessments of uncertainty are not carried out in a logically

coherent fashion; thus different descriptions of the same event can lead to different judgements (Tversky & Koehler, 1994). In their comprehensive summary of strategies and shortcomings of social judgement, Nisbett and Ross (1980) described the conclusions of several researchers by stating, "...objects and events in the phenomenal world are almost never approached as if they were *sui generis* [of its own kind; unique] configurations but rather are assimilated into preexisting structures in the mind of the perceiver" (p. 36). People use judgmental strategies, or simple heuristics, and knowledge structures, such as schemas, scripts, and personae, to interpret events and experiences in a quick and coherent fashion (Nisbett & Ross, 1980). Heuristics are used to reduce difficult mental tasks to simpler ones (Tversky & Kahneman, 1974). Their use, and the use of knowledge structures, is relatively automatic and without conscious consideration of the appropriateness of their use. Although more often than not, these strategies and structures produce correct or partially correct inferences, sometimes they result in erroneous interpretations. One can surmise that heuristics are present in people's interpretations of risk information and may sometimes result in conclusions not intended by the risk communicator.

The representativeness heuristic is one such judgmental strategy found within human inference (Kahneman & Tversky, 1973). It can be described in that "people expect the essential characteristic of the process will be represented, not only globally in the entire sequence, but also locally in each of its parts" (Tversky & Kahneman, 1974, p. 1125). For example, subjects are asked to assess the relative likelihood of three particular sequences of births of boys (B) and girls (G) for the next six babies born in the United States given the options i)BBBBBB, ii)GGBBBB, and iii)GBBGGB.

Although the likelihood of each of these sequences are almost identical, subjects relying on the representativeness heuristic will likely choose option iii) as the most “representative” of the random nature of birth (Nisbett & Ross, 1980). Research has found that these misconceptions of chance are not limited to naïve subjects (Tversky & Kahneman, 1974). This heuristic suggests that if a decision-maker has a belief about a certain type of offender (for example, a sex offender), when faced with an example of such an offender, the decision-maker will likely apply that general belief to the specific individual, even though the belief may not be pertinent in this particular case.

When people employ the availability heuristic they assess the frequency of a class or the probability of an event by the ease with which instances or occurrences can be brought to mind (Nisbett & Ross, 1980; Slovic, Fischhoff, & Lichtenstein, 1980). Many factors affect the retrievability of instances such as how recent such an event has been observed, the memorability and imaginability of similar occurrences, and the vividness of similar instances or occurrences (Nisbett & Ross, 1980; Slovic, Fischhoff, & Lichtenstein, 1980). When considering crime, the worst and most “vivid” crimes will be well publicized, and thus more memorable, suggesting that this heuristic is especially important when evaluating the general public’s risk perception of releasing offenders, especially violent offenders. In addition, a brief review of public media would seem to suggest that society has become more open in revealing the gruesome details of violent crime, further increasing the vividness of such events. Simply discussing a low-probability hazard may increase its judged probability regardless of what the evidence indicates (Slovic, Fischhoff, & Lichtenstein, 1980). An example of the availability heuristic can be found in a study by Lichtenstein, Slovic, Fischhoff, Layman, and

Combs (1978). They found that lethal events that are dramatic and sensational were overestimated when compared with unspectacular events, an observation particularly relevant to the perception of violence risk. The availability heuristic emphasises the role of experience as a determinant of perceived risk; biased experiences will likely lead to inaccurate perceptions (Slovic et al., 1980). It is important to remember that experience can be indirect. Long term members of parole boards and psychiatric review boards will accumulate much experience with the perpetrators of violent crimes, with the possible result being biased perceptions of offenders/patients and thus biased decision-making.

Schemas are knowledge structures that are used to categorize information to help in making judgements (Nisbett & Ross, 1980). These include relatively propositional structures such as theories and beliefs, as well as more schematic structures such as scripts (event-schemas), and personae (person-schemas). These schemas make events readily comprehensible and predictable in a timely and easy manner. There is a proliferation of research that demonstrates that people tend to form detailed impressions of events or other people based on limited information (see for example, Nisbett & Ross, 1980; Sanderson, Zanna, & Darley, 2000). For example, people will explain their own minor lawbreaking behaviour with situational attributions (for example, "I was late for an appointment and that is why I was speeding"); however, when others behave similarly, dispositional causes are attributed (for example, "He is a risky driver") (Fiske & Taylor, 1991). Scripts and personae have the ability to influence risk perception in that the mere knowledge of the nature of the crime committed by the offender/patient may lead the perceivers to form a detailed, negative impression of the offender's risk to re-offend. Attribution theory suggests that the perceiver would attribute dispositional

causes to the offender/patient's criminal behaviour, which may bias their perception of the risk that the offender/patient poses. Nisbett and Ross hypothesized that the use of these knowledge structures may be primarily determined by the judgemental heuristics; that is, the availability of a schema may increase the likelihood of its use and the representativeness of a schema may determine its arousal and application.

Overconfidence in personal judgements contributes to the erroneous interpretations that result from heuristics (Bazerman & Neale, 1983) and can lead to problems in risk perception and assessment. People tend to be overly confident in their own judgements. This tendency has been shown to apply equally to both experts and laypeople (Slovic, Fischhoff, & Lichtenstein, 1980). This type of cognitive distortion is especially important when considering the clinical overrides of actuarial assessments of violence risk (when a clinician inputs their expert opinion to change the risk level of an actuarial risk assessment).

Once a heuristic or schema is applied to a judgement, people tend to fail to make the necessary adjustments to correct their initial misapplication of a heuristic (Nisbett & Ross, 1980). These inadequate adjustments are referred to as "anchoring". Once a person has made an initial judgement of a problem, this judgement is resistant to further information. Anchoring can also be described as giving an estimate that is based on a previously provided standard, however extreme. More specifically, the above mentioned research found that people's beliefs change very slowly, and are in fact resistant to change even in the face of contrary evidence. Our reactions to initial exposures to information tend to structure the way that we process and interpret subsequent evidence. That is, evidence will appear reliable and informative if it is consistent with our initial

belief, whereas information that is inconsistent with our initial belief will be dismissed as unreliable, erroneous or not representative of the norm (Nisbett & Ross, 1980). If someone is presented with a violent offender/patient and told that a risk assessment completed on this individual suggests that he is a low risk to re-offend, this risk information would likely be contrary to the person's initial reaction to the violent details of the offence and as such, may be ignored.

“Framing” is another perceptual characteristic that can influence the perception of risk. This occurs when equivalent information is communicated differently and results in inconsistent evaluations. For example, a study by McNeil, Pauker, Sox and Tversky (1982) asked people to imagine that they had lung cancer and gave them a choice between two therapies, surgery or radiation, both described in some detail. Some subjects were given the cumulative probabilities of surviving for different lengths of time after treatment; while others were given the equivalent cumulative probabilities but framed in terms of dying rather than surviving (70% of those having surgery will have survived after one year versus 30% will have died). When the statistics were framed in terms of dying the percentage of subjects that chose radiation therapy over surgery dropped from 44% to 18%. It appears that choices involving gain are often risk averse, whereas choices involving losses are often risk taking (Tversky & Kahneman, 1981). This principle is pertinent to violence risk assessments in that information framed in a positive light, such as the offender/patient has a 30% chance of not committing a future violent offence, will be evaluated more favourably than the probabilistically equivalent negative version of the same information, the offender/patient has a 70% chance of committing a future violent offence.

Zajonc (1980) argued that affective reactions to stimuli are often the very first reactions that people have, occurring automatically and subsequently guiding information processing and judgement; all perceptions contain some affect. As a simple illustration of this point, Zajonc posited that “we do not just see “A house”: We see a *handsome* house, an *ugly* house, or a *pretentious* house” (p. 154). The importance of affect in the perception and subsequent decision-making is assured in decisions to release offenders/patients to the community, given the often emotion-provoking crimes that have led to their confinement. Risk and benefit are linked in people’s perceptions and consequently their judgements (Finucane, Alhakami, Slovic, & Johnson, 2000). Judgements of risk and benefit are guided by affect and reliance on affect likely increases and decreases depending on contextual factors, and the extent to which stimuli evoke images that are tagged clearly with positive or negative feelings (Finucane, Alhakami, Slovic, & Johnson, 2000). When one considers the risk posed by offenders or violent mentally ill patients, the images evoked by descriptions of their crimes could only be negative.

What is risk?

Some experts dichotomize risk into “real risk”, which is the objective, analytic, wise, and rational risk that experts purvey, and “perceptions of risk”, the subjective, often hypothetical, emotional, foolish, and irrational risk to which the public refers (Fischhoff, Watson, & Hope, 1984; Slovic, 1999). Without a common understanding of what defines risk, miscommunication and confusion are likely (Fischhoff, Watson, & Hope, 1984). Risk itself rarely entails just a single consequence. Decisions based on risk are not solely about risk; they are choices among options, each of which has different

costs and benefits (Slovic, Fischhoff, & Lichtenstein, 1984). In the criminal justice/mental health arena, choosing to be more strict with offenders/patients has financial and social costs, such as cost of incarceration or supervision in the community, loss of productivity, social and possibly financial loss to the offender/patient's family, to name a few. Greater leniency could potentially result in less financial cost, greater productivity, and the social benefits of the offender/patient's participation in family life. In terms of costs, leniency could result in new possibly violent and/or lethal crimes, as well as a negative effect on the offender/patient's family, in terms of the emotional and possibly financial demands made on the family. With decisions such as these, there is always a chance of false negatives and false positives; that are an offender/patient who should be kept in custody will be released or an offender/patient who could manage in the community without committing new crimes will be detained.

Perceptions of other societal risks

Slovic, Fischhoff, and Lichtenstein (1980) examined what laypeople and experts mean when they use the term "risk". It appears that experts define risk as the potential for fatalities. However, laypeople incorporate other considerations into their estimations of risk, such as the potential for disaster, that is, "how many times more deaths would occur if next year were particularly disastrous, rather than average" (p. 193). This was particularly evident when they were asked about the riskiness of nuclear power.

Although the annual fatality rate of nuclear power is very low, the potential for disaster is high. Disaster potential does not explain all the discrepancy between the perceived risk and the annual fatality rate for the activities and technologies that these researchers examined. Research has attempted to quantify perceived risk of both the public and

experts. A taxonomic scheme was used to examine people's aversion to some hazards, their indifference to others and the resulting discrepancies between the public and experts. In initial studies (for example, Fischhoff, Slovic, Lichtenstein, Read, & Combs 1978), the characteristics of risk that were examined were voluntariness of risk, immediacy of effect, knowledge about risk, the extent to which the risks are known to science, control over risk, newness, chronic catastrophic, common-dread, and severity of consequences. The hazards considered included smoking, alcoholic beverages, surgery, large construction, police work, hunting and several other events, activities and technologies. Participants were asked to rate the hazards on a scale of 0-100 in terms of the perceived risk of death (from "not risky" to "extremely risky"), and perceived benefit (from "no benefit" to "very great benefit"). On the risk characteristics participants were asked to rate each hazard on a scale of one to seven. For example, for voluntariness of risk, participants were asked, "Do people face this risk voluntarily? If some of the risks are voluntarily undertaken and some are not, mark an appropriate spot towards the center of the scale" (p. 195). The low end of the scale is, "risk assumed voluntarily" and the high end of the scale is, "risk assumed involuntarily". In further studies (Slovic, Fischhoff, & Lichtenstein, 1980), the researchers expanded the risk characteristics to 18 and looked at an extended number of hazards, from 30 to 90. They found that the risk characteristics, when factor analyzed, produced three subjective dimensions of risk, "dread risk", "unknown risk" and number of people exposed. The first, dread risk, refers to a risk's ability to evoke a visceral response; the second dimension, unknown risk, refers to an aversion to uncertainty and represents cognitive aspects of concern; and the third refers to the number of people who are exposed to the

risk (Fischhoff, Watson, & Hope, 1984). These factors demonstrated a parsimonious explanation for the perception of risk of all the hazards considered.

A two dimensional factor space has been used to show where the hazards fall in terms of “dread risk” (factor 1) and “unknown risk” (factor 2). Factor 3, the number of people exposed to the hazard was not included in this figure. Hazards such as nuclear weapons, nuclear power and crime fall at the high end of factor 1, or high dread risk. At the high end, this factor is defined by a perceived lack of control, dread, catastrophic potential, fatal consequences, and the inequitable distribution of risks and benefits. Factor 2, “unknown risk”, is defined at the high end as unobservable, unknown, new, and delayed in their manifestation of harm. Hazards such as chemical technologies have been found to score high on this factor.

The most significant finding of this research (Slovic et al., 1980) is that factor 1, or “dread risk” was the best predictor of perceived risk. In addition, perceived risk was inversely related to perceived benefit. Crime and other hazards that scored high on factor 1, “dread risk”, were judged to be increasing most. The authors concluded that perceived risk is quantifiable and predictable, and that the three factors, labelled “dread”, “familiarity”, and “exposure” best account for the differences in perceived risk of the hazards.

In a study of the individual, economic and social characteristics of risk perceptions among those living near the Savannah River Nuclear Weapons Site (SRS), researchers found a number of factors that influenced risk perceptions (Williams, Brown, Greenberg, & Kahn, 1999). It was found that one’s estimated proximity to and down-river from the site and relative river location surfaced as strong determinants of

risk perceptions among SRS residents. Trust in site officials, living in a quality neighbourhood, and demonstrating a willingness to accept health risks for economic gain strongly mediated heightened risk perceptions. These results suggest that different groups of people can vary in their perceptions of the same risk.

How perceptions of other societal risks affect decisions

Research has found that public perceptions of risk determine the priorities and legislative agendas of regulatory bodies such as the Environmental Protection Agency (EPA) (U.S. Environmental Protection Agency, 1987, as cited in Slovic, 1999) and such perceptions can affect policy decisions in general (Heilbrun, Dvoskin, Hart, McNiel, 1999). For instance, although experts believe hazards such as indoor air pollutants are greater health risks than the cleanup of hazardous waste, significantly more money has been invested by the EPA in the latter due to public perception (Slovic, 1999). Research of people's decisions to evacuate their home based on various risk messages has also demonstrated how the perception of risk affects decisions (Monahan & Steadman, 1996). People's reported intention to evacuate was strongly influenced by a categorical risk statement and less affected by probability figures. That is to say, people would tend to evacuate if the probability of a hurricane hitting their area was significantly higher than the probability of a hurricane hitting neighbouring areas. If the probability of the hurricane hitting their area was appreciably lower than it hitting neighbouring areas, they would tend not to evacuate. These results were not affected by the absolute values of the probabilities given.

People's perceptions of risk and criminal justice issues

Research has consistently shown public dissatisfaction with the criminal justice system in Canada and other countries such as the United States, Great Britain and Australia (Roberts, 1992). The general consensus is that the system is too lenient, that sentences should be more severe, and that parole boards are too liberal in granting early release (Doob & Roberts, 1983; Sacco & Johnson, 1990). In particular, research has shown that in general the public perceives that crime rates are increasing (Roberts, 2001), when in fact crime rates have been declining for eight consecutive years (Tremblay, 2000; as cited in Roberts, 2001). The discrepancy between actual violent crime rates and the public's perception is greater than general crime rates. Stalans and Diamond (1990) found that lay people are likely to construct a mental image of the "typical" offender who comes before the court and use this image in their opinions about sentencing severity. Such perceptions are often reflected in government policies to "get tough on crime." Given our society's aim for governmental practices that are supported by public opinion, this is understandable. However, when these perceptions are examined more specifically, this expressed dissatisfaction does not appear to be accurate. For example, in studies of mock sentencing decisions by lay people, the finding of a general perception of leniency in the criminal justice system replicated (St. Amand & Zamble, 2001; Zamble & Kalm, 1990). However, when lay people were asked to apply a sentence to a mock criminal case, the relative punitiveness of their sentences was only slightly elevated above a normative set of reference sentences. These results suggest that research on public sentiment is susceptible to misinterpretation and may lead to misapplication by legislators (St. Amand & Zamble, 2001). Policy makers

need to take heed of the specific findings of research that suggest that although the public expresses dissatisfaction with the criminal justice system, in terms of sentencing, they would sentence hypothetical offenders to similar sentences applied by the courts (St. Amand & Zamble, 2001).

Although research has suggested that expressing risk in probabilistic rather than non-probabilistic terms may increase the perception of risk (Purchase & Slovic, 1999), it has been suggested that in the case of predicting violence risk, probabilistic terms are considered “best practice” (Palmer, 1996, p. 57). More specifically research has looked at the different metric scales and the effect that this has on judged probability of harm with different populations of judges (Slovic & Monahan, 1995). For example, given a scale with a range from one to 100, versus a scale from one to 40, both mental health professionals and naïve participants will assign a higher risk to case vignettes relevant to violence potential when the scale ranged from one to 100. When the distribution of numerical response options allows for more discriminability among smaller probabilities, far lower estimates of likelihood of harm for a given case result. It seems that the participants in these studies did not attach meaning to the numbers on the scale other than using them as rank order; the numbers assigned were meaningful in a relative sense, not an absolute sense.

Similar differences in scale format have been found to affect risk judgements by expert subjects. The judgement of the risk posed by patients hospitalized with a mental disorder, as assessed by experienced clinicians given instructions in making probabilistic judgements and warned of the response-scale bias, have exhibited this bias (Slovic, Monahan, & MacGregor, 2000). Although frequency formats led to lower

likelihood assessments, they led to higher perceptions of risk; that is, a frequency of 2 out of 10 or 20 out of 100 led to higher perceived risk than an assessed probability of 20%. This was found to be true both in cases in which the likelihood assessments are made by the same person who judges risk and when they are made by another individual and communicated to the risk assessor. Further research has been done to replicate and expand the findings of Slovic and his colleagues (2000). Monahan, Heilbrun, Silver, Nabors, Bone, and Slovic (2002) looked at the decisions of psychologists who worked at least part time in a forensic setting versus those who did not. They found that the differences in scale format were significant only for those psychologists who worked in a forensic setting. A second part of this research hypothesized that this frequency effect would be stronger when the outcome (violence) being communicated is described in vivid versus pallid terms. Again, these significant findings were only found for those psychologists who worked in a forensic setting. The authors of this study suggested that forensic psychologists are more sensitive to the effects of fear-increasing risk communication formats perhaps due to having personal experience with making false negative predictions and the disastrous effects those predictions can result in for the victims and for their own careers. These apparent biases may apply similarly to those who use risk information to make decisions in all criminal justice settings. Similar frequency effects were reported for mock jurors asked to interpret evidence about a DNA match in a criminal trial (Koehler & Macchi, 1999, as cited in Slovic, Monahan & MacGregor, 2000). Frequentistic presentation of evidence led to a higher perceived likelihood than a probabilistic presentation.

Slovic and his colleagues (2000) discussed the possibility that the imagery and affect evoked by frequentistic representations could help explain the observed format differences. They suggested that if the risk assessor believes that the patient/offender “should” be hospitalized/incarcerated for longer periods of time, the assessor has a better chance of accomplishing this desired goal by communicating information about violence risk in terms of frequencies rather than in terms of probabilities. The use of frequencies rather than probabilities may promote fear-arousal. To decrease the influence of such bias, Slovic and his colleagues suggested using multiple formats for communicating violence risk.

Heuristics – criminal justice related

There is limited research that empirically tests criminal justice risk perceptions. However, research on decision-making is useful in the consideration of perceptions because “people respond to the hazards they perceive” (Slovic, Fischhoff, & Lichtenstein, 1982, p. 463). In the context of jury decision-making, Cunningham and Reidy (2002) note the use of cognitive limitations. These researchers observed that in the absence of sound violence risk assessment methodology and data, individuals undertaking violence risk assessment are likely to make fundamental errors that tend to result in an overestimation of violence risk. Knowledge of the distasteful details of the offence and other aggravating factors in the absence of violence risk assessment data would encourage the expectation of high future violence. Further, a jury member who lacks data on violence risk assessment does not have the mechanism to discount memorable yet infrequent events, understand or incorporate base rate data, or take account of other factors relating to risk for future violence.

Conclusions of a comprehensive review of empirical research on jury decision-making published between 1955 and 1999 suggested that decisions are based on scripts, schemas, stereotypes, and other cognitive mechanisms that are formed by experience (Devine, Clayton, Dunford, Seying, & Pryce, 2001). Information that is perceived as relevant and useful will be used to make sense of the often confusing sequence of events. Jurors do not appear to be able to control their cognitive processes, even when limiting instructions are given by the judge as a means of addressing these thinking errors.

St. Amand and Zamble (2001) found an anchoring effect for the information provided about sentencing decisions on the public's perception of criminal justice decisions. Information regarding sentencing that was presented as "accurate" influenced people's own assignment of sentence. Those subjects that were presented with the most punitive sentences as being accurate were more punitive when applying mock sentences; those presented with less punitive sentences as being "accurate" were less punitive when they applied their mock sentences. When no information was provided, the people's own assignment of sentence was more variable. The existence of an anchoring effect in this research suggests that the misuse of heuristics and knowledge structures may be found in criminal justice decisions.

How do these perceptions affect criminal justice decisions? – What non-risk related factors are used in criminal justice decisions?

Although the field of violence risk assessment has seen significant conceptual and empirical advances in research over the past decade, some research has found that the results of these risk assessments are not strongly considered in risk related decisions.

In a study of an autonomous review tribunal's decisions to detain mentally disordered offenders in maximum security, it was found that clinical opinion was most predictive (Hilton, & Simmons, 2001). There was no significant correlation between the actuarial risk of violent recidivism and the tribunal decision. Clinicians' recommendations for release were predicted by psychotropic medication (whether the patient was offered medication, compliant when offered, and showed some improvement having taken the medication), the physical attractiveness of the patient, institutional management problems, and criminal history. The detention of mentally disordered patients in maximum security was at best minimally influenced by the actuarial risk of reoffending. The influence of physical attractiveness in decisions to detain patients is similar to research in jury decision-making; lay people are significantly more likely to acquit more attractive defendants (Devine, Clayton, Dunford, Seying, & Pryce, 2001). Hilton and Simmons (2001), in fact, suggested a need for further research in the area of attractiveness, psychiatric disorders, and most relevant to this thesis, heuristic cues in forensic decision making.

In a study of factors affecting detention referrals, Nugent (2000) compared detained and non-detained offenders on a number of variables, including four commonly used risk measures. The results showed that detained offenders, as a group, were not higher risk than those offenders who were not detained. Sexual offence, child victim, refusal of treatment, number of past offences, number of past youth offences, criminal associates, and alienation were those variables that most significantly differentiated between those offenders who were detained versus those not detained. Detained offenders in general were described as less alienated from society, had fewer

interpersonal problems, and better impulse control. In this study, detained offenders were described on the whole as socially reprehensible, dislikable, and uncooperative, factors that cannot be objectively measured, but involve subjective perception.

Decisions to detain offenders appeared to have been based more on personal reactions to the offenders than the estimated degree of risk they posed to re-offend. Given the apparent importance placed on the nature of the offences committed, one drawback of this study was the absence of risk measures designed to specifically predict sexual recidivism. The results of Nugent's study and others (for example, Johnson, 2002) offer additional support for the use of actuarial risk assessment methods to improve the accuracy of detention decisions and suggest that decision-makers should rely more heavily on the results of the actuarial measures.

Consistent with Nugent's (2000) findings of the importance of personality factors, mostly based on subjective perceptions, in decision-making regarding offenders, Samra-Grewal and colleagues (Samra-Grewal, Pfeifer, & Ogloff, 2000) found that Case Management Officers (CMO) (or Parole Officers) who recommended denying parole focused on the offender's inability to recognize his own crime cycle and the offender's lack of empathy/remorse for the victim. The CMOs who recommended granting parole cited the offender's willingness to participate in treatment programs as a contributing factor to their decision. Also corroborating Nugent's (2000) findings was an earlier look at the use of detention legislation in federal corrections (Grant, 1996) that found that in terms of risk, those offenders who are detained are not higher risk than offenders referred and not detained. Those detained are more likely to have had a conviction for a sexual offence. Female offenders are less likely to be referred for detention, but once

referred are equally likely, compared to male inmates, to be detained until the end of their sentence. Aboriginal offenders are overrepresented in those offenders referred for detention. Those who were detained had re-offence rates lower than those released on full parole. Research on the Dangerous Offender designation found that offenders designated as Dangerous Offenders were disproportionately sex offenders, an overwhelming 92.2% (Bonta & Motiuk, 1996). These authors observed that those offenders who had their detention order lifted scored higher on the Statistical Information on Recidivism than those who were detained until the end of their sentences. These findings, taken together, suggest that information other than that related to actuarial risk is influential in criminal justice decisions.

Summary

The benefits of improved accuracy of risk assessment measures are not being realized to their fullest potential. Cognitive biases influence decisions in the correctional and forensic mental health systems. Effective application of the results of actuarial risk assessments requires an understanding of and a sensitivity to people's perceptions of the information contained in the communication of that risk. Focusing exclusively on the accuracy of risk assessments without consideration for the subsequent use of the information contained in risk assessments will not improve the quality of decisions for which risk assessments are designed to address. Lay people and experts alike are susceptible to errors in inference based on the misuse of knowledge structures and judgemental heuristics (for example, Nisbett & Ross, 1980). Specifically, these biases can taint risk-related decisions in both the correctional and the mental health fields. On a

larger scale, the perceptions and attitudes of the public affect the policies and priorities of governing bodies.

Purpose of the study

The purpose of this research is threefold. Firstly, this study seeks to replicate the three factor structure of risk perception identified in the research by Slovic et al. (1980). Although Slovic and his colleagues plotted the hazards within two-dimensional space only (Factor 3, number of people exposed, was not shown), the second undertaking of this research will look at the perception of risk of criminal justice hazards and place these hazards within three-dimensional space. The three-dimensional space will be based on the two-dimensional space delineated by Slovic and his colleagues. Thirdly, this study seeks to explore the perceptions of criminal justice risks in terms of frequency estimations of different types of offences, their knowledge of the risk and benefits of releasing offenders and their level of risk tolerance for releasing these individuals in general and specifically to the individual's own community. Victimization and gender issues will be examined in an exploratory manner.

Hypothesis 1

This study is designed in part to be a replication of the study by Slovic et al. (1980) and as such the first hypothesis is that the three factor structure will be replicated; dread risk, unknown risk and number of people exposed are the three factors that will best and most simply predict people's perception of the risk from the various hazards examined, which include criminal justice hazards. The inter-correlations between the risk characteristics will form clusters. Items within each cluster will be highly correlated with one another and between clusters the correlations will be low.

That is, Factor 1 will be represented by a cluster that includes the risk characteristics of fear, control, and likelihood of fatality. Factor 2 will be represented by a cluster that includes the risk characteristics of unknown, obvious/observable, effects delayed. Factor 3 will be represented by the risk characteristic of number of people exposed. These clusters reflect the three factor structure found by Slovic and his colleagues (1980) - dread risk, unknown risk, and number of people exposed.

Hypothesis 2

It is further hypothesized that criminal justice hazards will fall within the high Factor 1 (dread) and low Factor 2 (unknown) quadrant of the two dimensional space (see Figure 1). This hypothesis follows from the location of the hazard labelled "crime" in the study by Slovic and his colleagues (1980). More specifically, violent and sexual crimes will have a higher dread factor than property crimes.

Hypothesis 3

It is hypothesized that mean participant frequency ratings of criminal behaviour will be an overestimation when compared with actual crime statistics. More specifically, the discrepancy between the mean participant frequency ratings of child molestation and the actual statistics for this crime will be the greatest. The difference between frequency ratings of sexual crimes will be the most overestimated.

Hypothesis 4

Participants will list a significantly greater mean number of risks than benefits when they consider releasing an offender. This discrepancy will be more pronounced when participants are asked to consider releasing an offender to their community versus in general.

Figure 1

A representation of the hypothesized location of the hazards within the two-dimensional space

Factor 1 - Dread Risk

Factor 2 -
Unknown
Risk

	Low	High
High	Aspirin Sunbathing Food Preservatives	Nuclear Power Pesticides DNA Research
Low	Home Appliances Alcoholic Beverages Skateboards	Terrorism Firefighting Open-Heart Surgery Home Break-in Being Physically Assaulted Murder Rape Child Molestation

Hypothesis 5

The amount of risk tolerance that subjects are prepared to accept will be inversely related to the number of benefits associated with releasing an offender. Significantly less risk tolerance for sexual offenders will be identified than for both violent and property offenders. The amount of risk tolerance that subjects are prepared to accept for violent offenders will be less than that of property offenders. Further, risk tolerance for the different crimes will be strongly related to the associated dread risk of the crime.

Method

Participants

One hundred and sixty-seven students participated in this study. Sixty-seven were undergraduate students from Carleton University and one hundred were students from St. Lawrence College. Participants in the study ranged in age from 17 to 55 years, with a mean age of 24. Of the participants, 65% ($n = 109$) were females and 32% ($n = 54$) were males (3% did not specify their gender). Seventy-one percent ($n = 118$) were Caucasian, 7% ($n = 11$) were Asian, 2% ($n = 3$) were Black, 1% ($n = 2$), and the remaining 19% ($n = 33$) were either another ethnicity or did not answer the question.

Procedure

Participants were solicited in one of three ways. An experiment sign-up form was placed in a common area at Carleton University; students were offered either course credit or monetary compensation of ten dollars. Some Carleton university students were solicited randomly in campus hallways while testing was in progress and offered the same choice of compensation. Two instructors from St. Lawrence College agreed to

participation being solicited in their classes. Participants were informed both verbally and via the consent form (Appendix A) that participation was voluntary and confidential. The participants completed the paper and pencil self-report study materials while supervised by the researcher individually, in small groups, and in classroom settings. Privacy of responding and responses was maintained. When participants were finished they were individually thanked and given a copy of the debriefing form (Appendix B).

Materials

Study materials (Appendix C) were based on the research by Slovic and his colleagues (1980). The questionnaire is divided up into four sections. Section one requires that the participants rate a selection of 17 general and criminal justice risk variables or hazards on eight continuums of different risk characteristics. The general risk variables include for example, aspirin, terrorism, nuclear power, sunbathing, and pesticides and were chosen to represent the 4 quadrants in the 2-factor space as illustrated in Slovic et al., 1980 (Dread risk and Unknown risk). The criminal justice risk variables include home break-in, being physically assaulted, murder, rape, and child molestation. These risk variables or hazards are rated on eight continuums, such as perceived risk to self, degree of fear, degree to which risks are known to those exposed and number of people exposed to this risk. These risk characteristics were chosen to be representative of the 3 Factors delineated by Slovic and his colleagues (Dread risk, Unknown risk and Number of People Exposed). (See Appendix D for a complete list of societal hazards and risk characteristics examined in this study.)

Section two asks participants to estimate the frequency ratings of the following criminal behaviour per 100,000 per year: home broken into, physically assaulted, murder, rape, and child molestation.

Section three asks participants about their past victimization. Specifically, participants are asked to indicate if they were a victim of a break-in or a physical assault, if a close friend or family member was murdered, or if they were the victim of rape or child molestation either personally or if a close friend or family member was a victim. If the participant indicates that he/she was a victim they are asked to specify how long ago.

Section four asks participants to list as many risks and benefits they can think of for releasing prisoners.

Section five asks participants to rate the level of risk tolerance that they are prepared to accept in specific cases. For example, one case describes a rapist who is before the parole board and asking to be released. Participants are required to circle the highest level of risk for sexual re-offending that they are prepared to accept in order to say 'yes' to releasing this offender.

Section six asks participants to list as many risks and benefits they can think of for releasing prisoners who have committed different types of crimes; namely, property, violent and sexual.

Results

Descriptive Statistics

The mean ratings for the overall perceived risk and the seven risk characteristics are presented in Table 1. For example, for the mean "Perceived risk to me personally" of

Table 1

Mean Ratings for Societal Risks

Risk	Perceived Risk	Feared	Preventatively Controlled	Fatal	Consequences Obvious	Risks Known	Effects Immediate	Number of People Exposed
	1-100 ^a	1-7 ^a	1-7 ^a	1-7 ^a	1-7 ^a	1-7 ^a	1-7 ^a	1-7 ^a
Skateboards	14.5±25.4	1.8±1.5	3.5±1.9	2.4±1.5	3.9±2.1	3.0±1.8	4.6±1.9	3.1±1.6
DNA Research	15.6±22.9	2.3±1.6	4.1±2.0	2.0±1.5	2.8±1.9	4.1±2.0	3.2±1.8	2.9±1.7
Aspirin	25.8±25.9	2.1±1.5	4.1±1.7	2.9±1.6	2.9±1.6	3.9±1.8	3.1±1.4	3.6±1.8
Firefighting	28.8±30.4	3.7±2.0	4.8±1.6	4.3±1.6	5.2±1.6	2.4±1.5	5.0±1.6	3.1±1.5
Home Appliances	29.6±25.0	2.1±1.4	4.6±1.8	3.1±1.8	4.1±1.9	3.5±1.7	4.1±1.8	4.1±2.0
Pesticides	32.1±27.8	2.7±1.8	4.3±1.8	3.5±1.6	3.2±1.6	4.4±1.7	3.2±1.5	4.6±1.8
Murder ^b	32.2±32.1	5.4±2.1	3.9±1.8	6.7±1.1	6.5±1.1	2.8±2.1	6.2±1.4	4.0±1.8
Nuclear Power	32.4±26.7	3.8±2.0	4.5±1.7	4.8±1.8	4.4±1.8	3.6±1.8	4.2±1.7	3.9±1.7
Food Preservatives	33.4±29.4	2.5±1.7	3.6±1.9	2.6±1.5	2.5±1.5	4.8±1.9	2.6±1.5	4.9±2.1
Open-heart Surgery	34.3±32.3	4.9±2.0	5.0±1.6	4.4±1.4	5.0±1.6	2.6±1.6	5.1±1.5	3.9±1.5
Alcohol	36.7±28.9	2.3±1.6	4.1±1.9	3.8±1.6	4.7±1.8	3.2±1.7	4.1±1.7	5.4±1.5
Terrorism	37.3±27.8	5.2±1.8	3.4±1.7	5.7±1.3	5.8±1.4	3.2±1.9	5.3±1.5	4.4±1.9
Child Molestation ^b	37.9±34.2	5.4±1.9	3.8±1.8	4.0±1.8	5.2±1.9	4.2±1.8	4.7±1.8	4.4±1.5
Assault ^b	40.1±29.7	4.8±2.0	3.9±1.6	4.3±1.5	5.3±1.6	3.0±1.6	5.3±1.5	4.5±1.4
Sunbathing	42.8±29.0	2.7±1.8	4.8±1.8	3.2±1.7	4.6±1.9	3.4±1.8	3.1±1.6	5.6±4.5
Break-in ^b	43.6±28.5	4.8±1.8	4.4±1.6	3.3±1.5	5.4±1.6	3.1±1.6	5.3±1.5	4.9±1.6
Rape ^b	44.2±34.2	5.6±2.1	3.6±1.7	4.5±1.6	5.6±1.7	2.9±1.7	5.5±1.5	4.5±1.6

Note. Values presented are Means ± SDs

^aScale ranges

^bCriminal Justice Hazards

the 17 hazards, the highest mean rating was for rape, with a value of 44.2 out of 100. The lowest mean rating of the criminal justice hazards was for murder ($M = 32.2$). All of the criminal justice hazards had relatively high mean ratings for perceived risk; the ratings on all of the hazards ranged from $M = 14.5$ (skateboards) to $M = 44.2$ (rape). Interestingly, alcohol, food preservatives, open heart surgery, terrorism and sunbathing had mean Perceived Risk ratings in the same range as the criminal justice hazards. The criminal justice hazards were among those hazards rated the highest on the risk characteristic Feared. Again, rape had the highest mean rating on this risk characteristic ($M = 5.6$). Only open heart surgery ($M = 4.9$) and terrorism ($M = 5.2$) had mean ratings similar to the other criminal justice factors on this risk characteristic. The criminal justice hazards as a whole did not stand out on mean ratings of the characteristics of Preventative Control, Fatal, Risks Known and Number of People Exposed. However, the mean rating for murder in the risk characteristics Fatal, Consequences Obvious and Effects Immediate was the highest among all the hazards, including the other criminal justice hazards.

A stepwise regression analysis was completed to see how the risk characteristics contribute to perceived risk of the criminal justice hazards (see Table 2). SPSS (Statistical Program for the Social Sciences) enters variables in descending order of the proportion of variance predicted. The first variable to be entered accounts for the greatest proportion of variance. The later variables account for progressively less variance. Terrorism was included in this analysis because of its close proximity to the criminal justice hazards within the two-factor space. The risk characteristics Feared and

Table 2

Stepwise Regression Analysis

	Variable	<i>B</i>	<i>SEB</i>	Beta	<i>t</i>	<i>p</i>
Break-in	Feared	4.62	1.20	.30	3.84	<.001
	Number of People Exposed	3.86	1.24	.22	3.12	<.001
	Fatal	3.45	1.44	.18	2.40	.02
Assault	Feared	5.74	1.06	.38	5.41	<.001
	Number of People Exposed	5.01	1.50	.24	3.34	<.001
Murder	Feared	5.54	1.08	.36	5.15	<.001
	Number of People Exposed	4.08	1.28	.23	3.20	<.001
	Known	2.61	1.08	.17	2.43	.02
	Fatal	-4.52	2.08	-.15	-2.18	.03
Rape	Feared	5.21	1.23	.31	4.24	<.001
	Number of People Exposed	6.51	1.55	.30	4.21	<.001
Child Molestation	Number of People Exposed	9.12	1.56	.41	5.84	<.001
	Feared	4.90	1.30	.26	3.77	<.001
	Preventatively Controlled	-2.88	1.27	-.15	-2.26	.03
Terrorism	Number of People Exposed	5.12	1.04	.35	4.95	<.001
	Feared	3.98	1.06	.26	3.74	<.001
	Known	2.23	1.02	.15	2.19	.03

Note. *B* = raw regression weight, *SEB* = standardized regression weight, Beta = standard error of *B*

Number of People Exposed were the first two characteristics to enter into the regression equation for all of the criminal justice hazards as well as terrorism. For break-in, $R^2 = .24$, $F(3,158) = 16.63$, $p < .001$, assault, $R^2 = .27$, $F(2,158) = 25.94$, $p < .001$, murder, $R^2 = .26$, $F(4,155) = 13.90$, $p < .001$, and rape, $R^2 = .23$, $F(2,158) = 24.20$, $p < .001$, the risk characteristic Feared was followed by Number of People Exposed in the stepwise equation. For child molestation, $R^2 = .32$, $F(3,157) = 24.48$, $p < .001$, and terrorism, $R^2 = .26$, $F(3,156) = 18.60$, $p < .001$, Number of People Exposed went into the stepwise first, followed by Feared. For murder and terrorism, Risks Known was the third variable entered. The risk characteristic Fatal was included in the stepwise regression for break-in and murder. Preventative Control was the third variable entered for child molestation.

To begin to address hypothesis 1, that the inter-correlations between the eight risk characteristics will form clusters, the risk ratings were averaged across societal risks and then correlated with one another. The results are shown in Table 3 and the order of the risk ratings is in keeping with the order they were presented to the participants. Many of the ratings of the various risk characteristics tend to be moderately to highly inter-correlated. For example, risks that are feared were also categorized as not obvious, $r = -.82$. The most obvious exceptions to the strong inter-correlations are the correlations between not Preventatively Controlled and the other risk characteristics; these were all low. Similarly, Number of People Exposed did not correlate strongly with Feared and Fatal. Unlike Slovic's results (Slovic et al., 1982) there is not a clear pattern which suggests an obvious breakdown of the risk characteristics into separate underlying

Table 3

Intercorrelations of the Risk Ratings Collapsed Across Societal Risks

	1.	2.	3.	4.	5.	6.	7.	8.
1. Perceived Risk	-							
2. Feared	.615**	-						
3. Fatal	.453	.757**	-					
4. Number of People Exposed	.807**	.138	.106	-				
5. Not Obvious	-.566*	-.816**	-.819**	.741**	-			
6. Not Immediate	-.317	-.792**	-.742**	.781**	.909**	-		
7. Risk Unknown	-.157	-.413	-.511*	.190	.741**	.781**	-	
8. Not Preventatively Controlled	-.071	.165	.073	.017	-.032	-.150	.228	-

Note. * $p < .05$ (two-tailed). ** $p < .01$ (two-tailed).

dimensions or factors. This method of constructing a correlation matrix from the averages of the ratings of each hazard increases the chances of obtaining results such as these (no clear pattern to suggest underlying dimensions). This observation is explored more fully in the following section on Factor Analysis.

Factor Analysis of Societal Risks

In keeping with the methods of Slovic et al. (1980) the ratings were averaged across societal risks creating a seven by 17 table (7 risk characteristics, 17 societal hazards). Inter-correlations were calculated and the resulting matrix (see Table 4) served as the data source for the Procrustes confirmatory factor analytic procedure. The order of the risk ratings in Table 4 is consistent with the hypothesized factor structure in keeping with the findings of Slovic et al. The orthogonal Procrustes rotated loadings are reported in Table 5. A diagnostic evaluation of the item loadings was undertaken which compared the squared item loading on the hypothesized factor (content variance) with the sum of the squared loadings on the remaining two factors (nuisance variance). If the nuisance variance exceeded the content variance the items loading on that factor is in question. For example, the loading of Rating 1 (Fear) on Factor 1 was .5171 which when squared equals .2674 (content variance). The sum of the squared loadings of Rating 1 on Factor 2 and Factor 3 was .5458 (.5424 + .0034). Therefore, the nuisance variance exceeds the content variance for Rating 1. A similar analysis revealed that nuisance variance predominates in Ratings 1 through 6 suggesting a poor fit with the hypothesized factor structure.

Table 4

Inter-correlation of averaged ratings

	1.	2.	3.	4.	5.	6.
1. Feared	-					
2. Risks Controllable	-.165					
3. Fatal	.757	-.073				
4. Consequences Obvious	.816	-.032	.819			
5. Risks Unknown	-.413	-.228	-.511	-.741		
6. Effects Immediate	.792	-.150	.742	.909	-.781	
7. Number of People Exposed	.138	-.017	.106	.192	.190	-.116

Table 5

Procrustes rotated factor loadings for the correlations of the mean ratings

	Dimension 1	Dimension 2	Dimension 3
1. Feared	.517	.737	.058
2. Risks Controllable	.599	-.762	.048
3. Fatal	.612	.632	.021
4. Consequences Obvious	.764	.617	.009
5. Risks Unknown	-.799	-.181	.416
6. Effects Immediate	.642	.667	-.311
7. Number of People Exposed	.127	.113	.958

A further analysis considered the congruence of the hypothesized factors with the data. Congruence coefficients for Factor 1 through 3 were .613, .411, and .877 respectively. Neither Factor 1 nor Factor 2 met the acceptable threshold of .80 for congruence. Taken together the results of the Procrustes confirmatory procedure do not support the hypothesized 3-factor structure.

The correlation matrix was then analyzed using the exploratory procedure of Principal Components analysis. The Principal Components loadings for the first three dimensions are reported in Table 6. Eigenvalues for the first three dimensions were 3.94, 1.26, and 1.04 respectively accounting for 56.3%, 18.0%, and 14.8% of the total variance. In order to ascertain the number of dimensions 95% two-sided confidence intervals for the eigenvalues were constructed using the theoretical results given in Girshich (1939) with Reddon's (1999) software package. These are plotted in Figure 2. The confidence intervals for the first dimension was the only one that did not overlap with a subsequent dimension suggesting that the scree included dimensions from two through 7 and supporting a single factor solution comprised of ratings of Fear, Fatal, Consequences Obvious, Unknown, and Immediate with the ratings of Preventatively Controlled and Number of People Exposed being relatively unrelated.

A single factor solution was unexpected given the replication of the Slovic et al. (1980) methods. A possible explanation for this finding is reduced variance in the current sample due to a single subject pool of student participants, whereas Slovic et al. recruited participants from various places in society. Alternatively, the reduced number of variables and ratings could have reduced the variance available (for example,

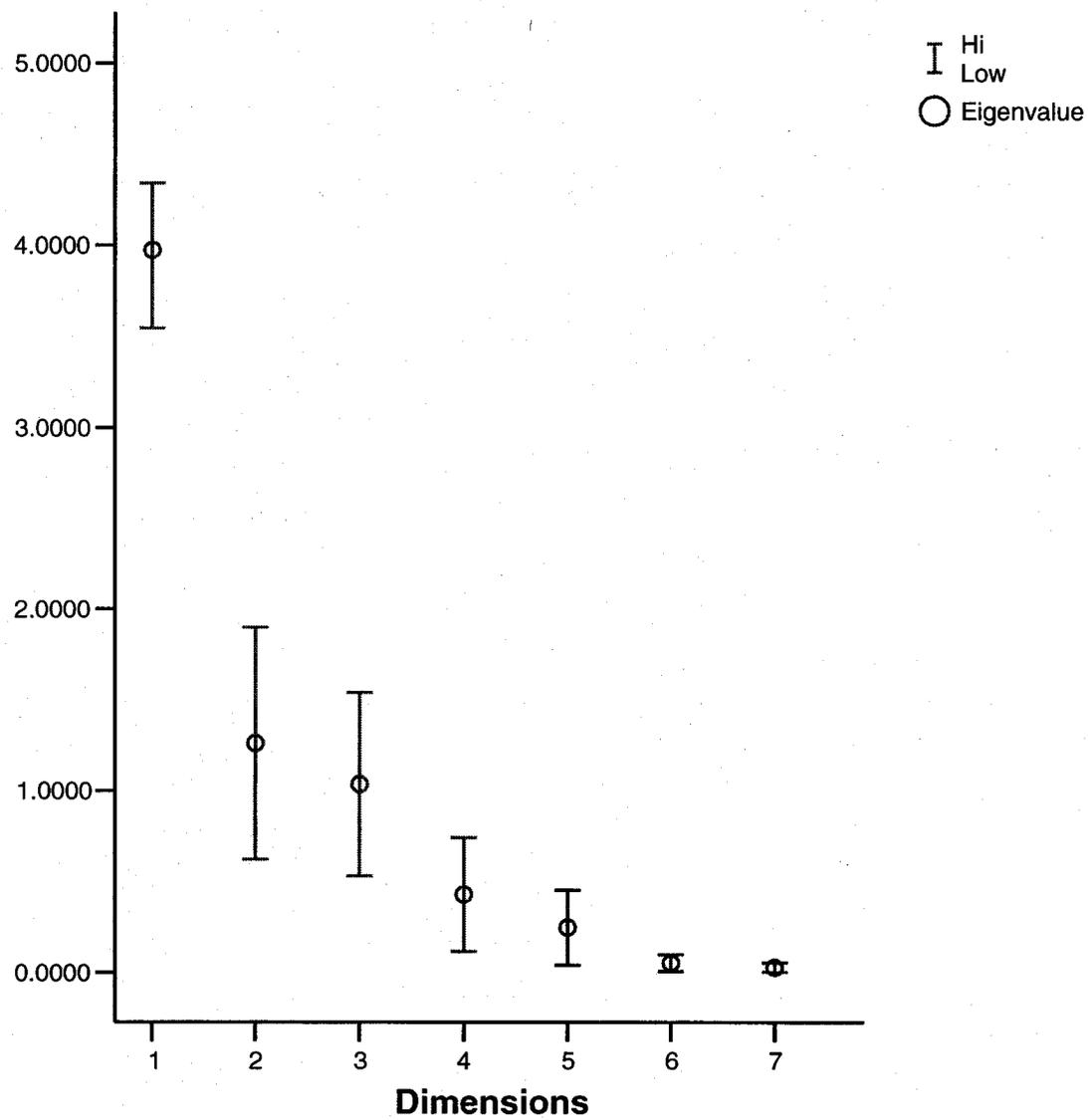
Table 6

Principal Components loadings for the correlations of the mean ratings

	Dimension 1	Dimension 2	Dimension 3
1. Feared	.863	.260	-.026
2. Risks Controllable	-.071	-.650	.717
3. Fatal	.869	.135	.049
4. Consequences Obvious	.972	.057	.130
5. Risks Unknown	-.761	.511	-.059
6. Effects Immediate	.955	-.092	-.182
7. Number of People Exposed	.049	.692	.682

Figure 2

Scree Plot and 95% Confidence Intervals for Eigenvalues (Using Ratings Averaged Across Societal Risks)



Fischhoff et al., 1978). Finally, the method of averaging the ratings and constructing a correlation matrix from the averages likely served to increase the correlation between ratings and skew the resulting correlations towards a single factor. For example, the correlation between Preventatively Controlled and Number of People Exposed for the societal risk of alcohol was $r = .02$. The correlation of the same two ratings for DNA Research was $r = .45$. When the ratings are first averaged between societal risks and then correlated, the averaged ratings produce a correlation of $r = .31$. However, the mean effect (the average correlation) is actually $r = .24$. Intuitively, it makes sense that if you add information from two ratings that are not correlated to two ratings that are correlated, neutral information is being added to an existing correlation that will be less effected. The method of using means of ratings to derive the correlation matrix between ratings likely results in over-estimates of the relationships between ratings and masks important variance.

A second correlation matrix was derived using the average of the correlations. Specifically, a correlation matrix containing inter-correlations across the seven ratings was calculated for each societal risk. The correlations were then averaged across all of the societal risks and are reported in Table 7. As before, the Procrustes confirmatory procedure was employed to determine if the hypothesized 3-factor structure was present in the correlation matrix. The Procrustes rotated loadings are reported in Table 8. Nuisance variables were determined using the same procedure to compare the sum of squared loadings with the squared factor loadings. Ratings of Fear, Preventatively Controlled, Fatal, Unknown, and Number of People Exposed were identified as variables where nuisance variance predominated. Congruence coefficients for Factors 1

Table 7

Averaged Inter-correlations across the ratings

	1.	2.	3.	4.	5.	6.
1. Feared	-					
2. Risks Controllable	.022					
3. Fatal	.389	.024				
4. Consequences Obvious	.198	.238	.233			
5. Risks Unknown	.099	-.004	.089	-.202		
6. Effects Immediate	.173	.157	.234	.445	-.114	
7. Number of People Exposed	.221	.006	.261	.128	.125	.144

Table 8

Procrustes rotated factor loadings for the averaged correlations

	Dimension 1	Dimension 2	Dimension 3
1. Feared	.400	.253	.548
2. Risks Controllable	.539	.356	-.675
3. Fatal	.396	.324	.564
4. Consequences Obvious	.107	.813	-.007
5. Risks Unknown	.703	-.511	.049
6. Effects Immediate	.123	.734	.076
7. Number of People Exposed	.437	.119	.444

through 3 were .67, .45, and .39 respectively. Taken together the analysis does not support the hypothesized 3-factor structure.

The exploratory factor analytic procedure of Principal Components analysis was employed on this matrix. Eigenvalues for these three dimensions were 2.02, 1.37, and 0.97 respectively accounting for 28.9%, 19.6%, and 13.9% of the variance. As before, 95% two-sided confidence intervals for the eigenvalues were calculated and these are plotted in Figure 3. The confidence intervals for the first two dimensions do not overlap, however the confidence intervals intersect for the third and subsequent dimensions indicating that they are part of the scree (Cattell & Vogelmann, 1977) and favouring a 2-factor solution.

The 2-factor solution is represented in the varimax rotated component loadings (see Table 9). The first factor is comprised of the ratings of Fear, Fatal, and Number of People Exposed. The second factor is comprised of the remaining four ratings. For each societal risk a Factor 1 and Factor 2 score was calculated by averaging the ratings that comprised the factor. These factor scores were then standardized across all societal risks which provided a z-score for each societal risk. This relative ranking of each societal risk was plotted and is represented in 2-factor space in Figure 4.

Perception of Criminal Justice Hazards and Non-Criminal Justice Hazards

To test whether people perceive non-criminal justice hazards and criminal justice hazards similarly in terms of risk, a correlation was computed between the mean of both Factor 1 and Factor 2 scores for all the non-criminal justice hazards with the mean

Figure 3

Scree Plot and 95% Confidence Intervals for Eigenvalues (Using Averages of Correlations Within Hazards)

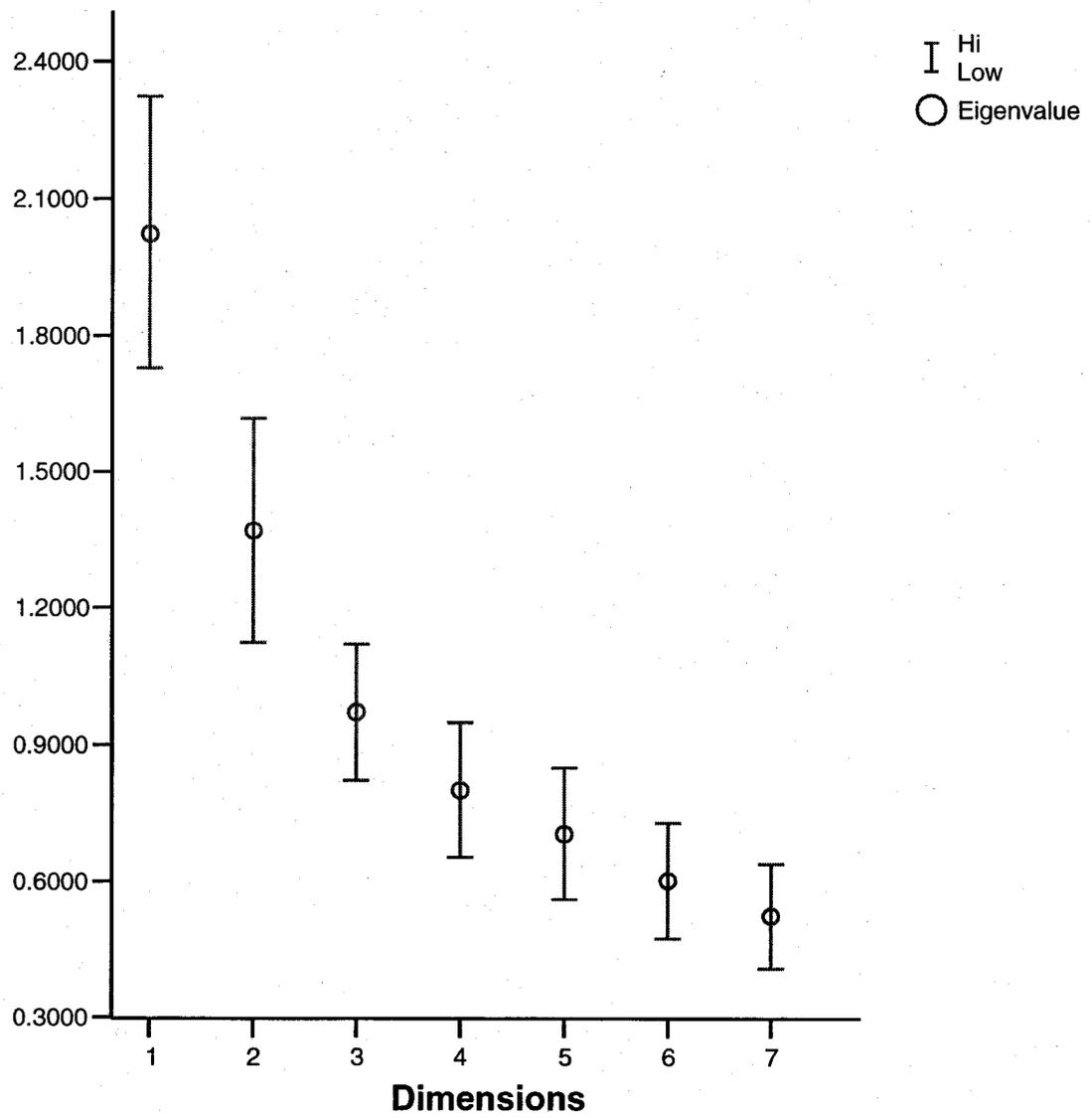
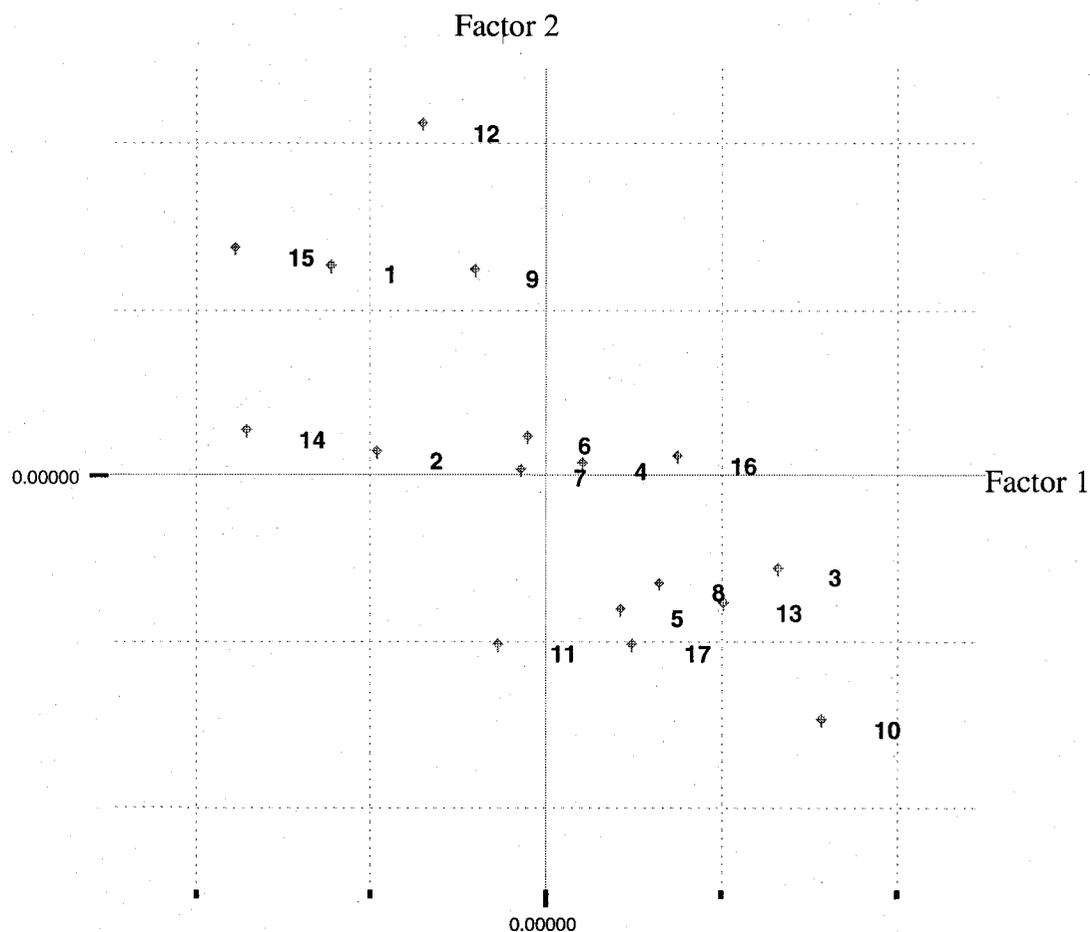


Table 9

Varimax Sorted Rotated Component Loadings

		Factor 1	Factor 2
Factor 1	1. Fatal	.731	.162
	2. Feared	.708	.097
	3. Number of People Exposed	.634	-.011
Factor 2	4. Consequences Obvious	.234	.785
	5. Effects Immediate	.287	.688
	6. Risks Controllable	-.027	.480
	7. Risks Unknown	.415	-.541

Figure 4

Location of Hazards in Two-Factor Space

Factor 1: DREAD (Fatal, Fear, Number of People Exposed)

Factor 2: UNCERTAINTY (Consequences Not Obvious, Effects Not Immediate, Risks Unknown, Not Controllable)

- | | | |
|--------------------|------------------------|------------------------|
| 1. Aspirin | 9. Pesticides | 17. Open-heart Surgery |
| 2. Home Appliances | 10. Murder | |
| 3. Terrorism | 11. Firefighting | |
| 4. Nuclear Power | 12. Food Preservatives | |
| 5. Break-ins | 13. Rape | |
| 6. Sunbathing | 14. Skateboards | |
| 7. Alcohol | 15. DNA Research | |
| 8. Assault | 16. Child Molestation | |

Factor 1 and Factor 2 score for the criminal justice hazards, respectively. The Pearson correlation was $r = .65, p < .01$. The Factor 2 Pearson Correlation was $r = .51, p < .01$. Although this method of averaging the ratings and computing a correlation from the averages may result in an increase in the correlations between ratings and skew the resulting correlations, we can make a general comment from these findings. They suggest that people perceive the risk of criminal justice hazards in the same way that they perceive other general risks.

Location of Hazards within the Two-factor Space

A general observation of the two-factor space presented in Figure 4 suggests that the criminal justice hazards all fall in the high Factor 1, low Factor 2 quadrant. The exception to this is Child Molestation, which falls just outside this quadrant close to the Factor 1 axis line, in the high Factor 1, high Factor 2 quadrant. Additionally, a perusal of Figure 4 reveals that Murder appears to stand alone in terms of its location within this factor space.

Terrorism and Open-Heart Surgery are grouped in the same quadrant as the majority of the criminal justice hazards. The common location of Terrorism makes logical sense given that terrorism is also a criminal act. Open-Heart Surgery is a hazard that could possibly result in death, as in the case of Terrorism and as is certain with Murder. t- tests of Factor 2 (Uncertainty) scores support the commonality of Terrorism with the Break-in, Assault, and Rape; there is no significant difference between any of these hazards in terms of their Factor 2 score (see Table 10). People perceive a similar degree of uncertainty in terms of the risk posed by Break-in, Assault, Rape and Terrorism. t-tests of Open-Heart Surgery also suggest a similar perception in terms of

Table 10

t-test comparison between hazards that hold similar positions in two-factor space on Factor 2 scores

Hazard Pairs	Mean	SD	<i>t</i>	<i>p</i>
Break-in – Rape	-.05	4.57	-.14	.89
Break-in – Assault	-.45	4.45	-1.29	.20
Assault – Rape	.42	4.25	1.26	.21
Terrorism – Break-in	.64	4.20	1.95	.05
Terrorism – Rape	.60	4.34	1.77	.08
Terrorism – Assaulted	.17	4.34	.50	.62
Nuclear Power – Alcohol	.13	5.21	.33	.74
Child Molestation – Sunbathing	.30	5.94	.64	.52
Child Molestation – Alcohol	-.22	5.59	-.51	.61
Child Molestation – Nuclear Power	-.14	5.46	-.33	.74
Murder – Open-Heart Surgery	-1.27	4.42	-3.69	<.001
Rape – Open-Heart Surgery	.66	4.48	1.88	.06
Assault – Open-Heart Surgery	.99	4.92	2.60	.01
Break-in – Open Heart Surgery	.59	4.91	1.55	.12
Terrorism – Open-Heart Surgery	1.14	4.75	3.07	<.001

Factor 2 (Uncertainty) with Break-in and Rape. This is confirmed by non-significant t-test results for both of these pairs, $t = 1.55, p > .05$; $t = 1.88, p > .05$, respectively. In terms of Factor 1 (Dread) (see Table 11), Open-Heart Surgery is also situated close to Break-in. t-tests indicate that there is no significant difference between these two hazards on this factor, $t = -.72, p > .05$. This suggests that people hold a similar perception of risk between Break-in and Open-Heart Surgery, in terms of the degree of Uncertainty (Factor 2) associated with the risk.

Other interesting t-tests results (also in Table 11) include a comparison on Factor 1 (Dread) between Murder and Terrorism, which is the only other hazard that appears to be close to Murder on this factor. This t-test confirms that on Factor 1 these hazards are significantly different, $t = -2.64, p < .01$. In terms of Factor 2, the closest hazard to Murder is Open-Heart Surgery. Again, t-test results suggest that these hazards are significantly different in terms of their Factor 2 score, $t = -3.69, p < .001$. Murder solicits a unique perception of risk.

Child Molestation appears to hold a similar position on Factor 2 as Alcohol, Sunbathing, and Nuclear Power. t-tests confirm this observation, $t = -.51, p > .05$; $t = .64, p > .05$; and $t = -.33, p > .05$, respectively. It is interesting that Child Molestation provokes a similar perception of risk in terms of Uncertainty as these other dissimilar societal hazards. Also this result highlights a notable difference between this study and the previous ones completed by Slovic (Fischhoff, Slovic et al, 1978 and Slovic et al., 1980); that is, nuclear power is no longer isolated in the two-factor space.

Of the 12 hazards that are common to both the present study and those found in the study by Slovic and his colleagues, that is, the non-criminal justice hazards, only 4

Table 11

t-test comparison between hazards that hold similar positions in two-factor space on Factor 1 scores

Hazard Pairs	Mean	SD	<i>t</i>	<i>p</i>
Break-in – Rape	-.05	4.57	-.14	.89
Break-in – Assault	-.63	3.48	-2.35	.02
Assault – Rape	-.95	3.09	-3.99	.00
Rape – Child Molestation	.65	3.16	2.66	.01
Assault – Child Molestation	-.29	3.57	-1.05	.30
Terrorism – Break-in	2.40	3.98	7.77	.00
Terrorism – Murder	-.71	3.43	-2.64	.01
Terrorism – Rape	.83	3.88	2.76	.01
Terrorism – Assaulted	1.77	3.80	6.01	.00
Break-in – Nuclear Power	-.56	4.13	-1.75	.08
Break-in – Open Heart Surgery	-.21	3.80	-.72	.47

are in the same quadrant as the original. These are aspirin, terrorism, food preservatives and open-heart surgery (see Figure 4). Although this finding is not in keeping with the primary hypothesis, it should be noted that of the criminal justice hazards, all but one fell in the hypothesized quadrant.

Perceived Risk and Factor Scores on Criminal Justice Hazards

To better understand the make-up of people's perception of risk of criminal justice hazards, the ratings of perceived risk and the factor scores of the criminal justice hazards have been calculated and are shown in Table 12. Rape is the highest rated on Perceived Risk, followed by Break-in, Assault, Child Molestation and Murder.

Although people perceive the risk of murder to be lower than all the other criminal justice hazards, they appear to dread murder the most, and understandably so. However, the uncertainty (Factor 2) associated with murder is the lowest of all the criminal justice hazards. Rape rates second on Factor 1, Dread risk, followed by Child Molestation; this intuitively makes sense. Although the Perceive Risk of Child Molestation is the second lowest of the criminal justice hazards, in terms of Uncertainty, or Factor 2, Child Molestation is the highest rated. Break-in has the second highest mean score on Table 12. Perceived Risk, however, has the lowest score on Dread risk and the second lowest on Uncertainty.

Frequency Estimates, Perceived Risk and Risk Factors

Table 13 reports the correlations between the estimated frequency of criminal justice risks and Perceived risk, Factor 1, and Factor 2 ratings. For example, the first row reports the correlations of the estimated frequency of Break-ins with the Perceived Risk of Break-ins, and the Factor 1 and Factor 2 ratings of Break-ins. The only

Table 12

Factor Scores of Criminal Justice Risks

CJ Risk	Perceived Risk Ratings (out of 100)	Factor 1 scores (Dread risk)	Factor 2 scores (Uncertainty)
Murder	32.22	16.02	10.20
Child Molestation	37.90	13.85	14.58
Assault	40.12	13.58	12.47
Break-in	43.61	12.97	12.02
Rape	44.20	14.53	12.14

Table 13

Correlation of Frequency Estimates with Perceived Risk and Risk Factors

	Perceived Risk	Factor 1 (Dread risk)	Factor 2 (Uncertainty)
Home Broken Into	.04	.04	-.09
Physically Assaulted	.08	-.01	.01
Murder	.10	.11	.00
Rape	.13	.03	.13
Child Molestation	.22**	.07	-.02

Note. Participants with estimates of Break-in 50,000 or greater and Murder estimates of 20,000 or greater were removed because they are more than 3 standard deviations above the mean. ** $p < 0.01$ (two-tailed)

statistically significant finding was the correlation between the estimated frequency of Child Molestation and the corresponding Perceived Risk. That is, people who estimated the frequency of Child Molestation as high also rated the Perceived Risk of Child Molestation as high.

Frequency Estimates of Criminal Justice Risks

Table 14 reports the descriptive statistics for the estimated frequency of criminal justice risk. The mean ratings follow the pattern of actual crime rates in Canada. That is, Break-ins had the highest mean estimated frequency, followed by Assaults, Rape, Child Molestation and Murder, respectively. In terms of the accuracy of estimations, this is varied by crime. Break-ins were overestimated ($M = 1129.3$ per 100,000) when compared with actual crime rates (585.6 per 100,000 for 2003, Canadian Crime Statistics, 2004). However, Rape and Child Molestation were highly overestimated ($M = 506.9$, actual rate is 22.4 per 100,000; $M = 344.5$, actual rate is 14.4, respectively). It is likely that this can at least partially be explained by a lower level of reporting of these types of crimes, given the nature of the crimes. Murder was also grossly overestimated; the mean frequency estimate was 57.6 and the actual rate is 1.1 per 100,000. The frequency estimate for assault ($M = 645.4$) was also an overestimate when compared with the actual rate of 202.4 (Canadian Crime Statistics 2003).

Given these results, the hypothesis that mean participant frequency ratings of criminal behaviour will be an overestimation when compared with actual crime statistics is supported. As predicted, the discrepancies between frequency ratings of the sexual crimes are the highest, with the child molestation estimate slightly higher than that of rape, relative to their respective actual rates.

Table 14

Descriptive Statistics for Frequency Estimates of Criminal Justice Risks

	Actual	Mean	SD	Range	Median
Home Broken Into	585.6	1,129.3	3,456.7	2 - 25,000	50
Physically Assaulted	202.4	645.4	1,889.6	5 - 10,000	50.1
Murder	1.1	57.6	160.7	0.3 - 1,000	10
Rape	22.4	506.9	1,697.8	0.7 - 10,000	30
Child Molestation	14.4	344.5	1,233.3	2.0 - 10,000	30

Note. Participants with estimates of Break-in 50,000 or greater and Murder estimates of 20,000 or greater were removed because they are more than 3 standard deviations above the mean. "Actual" figures calculated from Table 3.12 of Canadian Crime Statistics 2003 report.

Victimization and Gender Effects

It makes intuitive sense that someone who has been victimized may have the tendency to overestimate the frequency of the crime for which they were the victim. To address this presumption, t-tests were computed comparing the frequency estimates of victims and non-victims on the five criminal justice risks. Only one significant difference was found; Assault victims were significantly more likely, $p = .01$ to estimate the frequency of Assaults as higher than non-victims ($M = 50.95$, victims; $M = 36.99$, non-victims). It should be noted that the number of victims for each type of crime is small and this has the potential to decrease the likelihood of finding a statistically significant effect.

Table 15 reports the victim/non-victim differences in their ratings of Perceived Risk, and Factor 1 and Factor 2 items. Although a significant difference was found for Factor 2 ratings of Rape, $t = -2.30$; $p < .05$, when corrected for familywise error, no significant differences were found among Perceived Risk and Factor 1 and Factor 2 items.

There were no significant differences between males and females in their frequency estimates of the different types of crimes. However, some gender differences were noted in their ratings of Factor 1 and Factor 2 items (see Table 16), but not for Perceived Risk. In terms of Factor 1, significant differences were found for each type of crime with the exception of Child Molestation. Females were more likely to rate Break-ins, Assault, Murder, and Rape higher on Factor 1 than males. On Factor 2, significant differences were found only for Break-in. Interestingly, males were more likely to rate Break-ins high on Factor 2 risk characteristics.

Table 15

Victim/Non-Victim Differences in Risk Ratings of the different types of offences

		Victim	Non-Victim	<i>t</i>	<i>p</i>
Break-in	Number of Participants	36	129		
	Perceived Risk	51.00	41.52	-1.74	n.s.
	Factor 1 (Dread)	13.47	12.82	-1.00	n.s.
	Factor 2 (Uncertainty)	11.42	12.18	.99	n.s.
Assault	Number of Participants	38	128		
	Perceived Risk	48.33	37.76	-1.88	n.s.
	Factor 1 (Dread)	13.61	13.51	-.14	n.s.
	Factor 2 (Uncertainty)	12.81	12.43	-.48	n.s.
Murder	Number of Participants	13	154		
	Perceived Risk	36.53	30.77	-.96	n.s.
	Factor 1 (Dread)	16.78	15.82	-1.52	n.s.
	Factor 2 (Uncertainty)	10.78	10.12	-.94	n.s.
Rape	Number of Participants	35	131		
	Perceived Risk	48.47	43.20	-.82	n.s.
	Factor 1 (Dread)	14.97	14.40	-.80	n.s.
	Factor 2 (Uncertainty)	13.58	11.81	-2.30	<.05
Child Molestation	Number of Participants	34	130		
	Perceived Risk	46.04	35.88	-1.57	n.s.
	Factor 1 (Dread)	13.69	13.91	.31	n.s.
	Factor 2 (Uncertainty)	15.78	14.20	-1.80	n.s.

Table 16

Gender Differences in Risk Ratings of the different types of offences

		Male	Female	<i>t</i>	<i>p</i>
Break-in	Perceived Risk	46.04	42.69	.692	n.s.
	Factor 1 (Dread)	11.96	13.38	-2.49	<.01
	Factor 2 (Uncertainty)	13.28	11.47	.155	<.01
Assault	Perceived Risk	35.00	43.22	-1.63	n.s.
	Factor 1 (Dread)	11.26	14.77	-6.34	<.001
	Factor 2 (Uncertainty)	12.41	12.59	-.27	n.s.
Murder	Perceived Risk	29.23	33.40	-.77	n.s.
	Factor 1 (Dread)	15.09	16.48	-2.50	<.05
	Factor 2 (Uncertainty)	10.78	9.85	1.49	n.s.
Rape	Perceived Risk	37.74	48.16	-1.82	n.s.
	Factor 1 (Dread)	12.69	15.50	-4.71	<.01
	Factor 2 (Uncertainty)	12.07	12.14	-.09	n.s.
Child Molestation	Perceived Risk	32.88	40.47	-1.32	n.s.
	Factor 1 (Dread)	13.17	14.28	-1.83	n.s.
	Factor 2 (Uncertainty)	14.37	14.58	-.27	n.s.

Risks and Benefits of Releasing Offenders

Table 17 reports the differences in mean number of risks and benefits listed by the participants. There is a statistically significant difference in the number of risks and benefits listed for each of the different type of offenders (general, property, violent, and sexual). That is, the participants listed significantly more risks than benefits for each type of offence. This confirms the hypothesis that participants will list a greater mean number of risks than benefits when they consider releasing an offender to the community. The risks and benefits of releasing property offenders, violent offenders and sexual offenders were compared with each other using t-tests. All of these comparisons were significant, $p \leq .001$ with the exception of the number of risks of releasing violent offenders as compared with the number of risks of releasing sexual offenders. People view the risks of releasing these two types of offenders as comparable.

To test whether participants listed more risks when considering releasing different types of offenders, t tests were computed to compare the number of risks listed for releasing the different types of offenders. That is, property offender were compared with violent offenders, $t = -4.39, p < .001$; property offenders were compared with sex offenders, $t = -4.18, p < .001$; and violent offenders were compared with sex offenders, $t = -.51, p < .001$. In sum there was a statistically significant difference in the number of risks listed when participants considered releasing property offenders as compared with violent offenders and sexual offenders. Benefits were also examined in this manner. t tests were computed for the number of benefits listed for property offenders as compared with violent offenders, $t = 2.86, p < .001$; property offenders were compared with sex offenders, $t = 7.58, p < .001$; and violent offenders were compared with sex

Table 17

Differences in Mean Number of Risks and Benefits

	Risks	Benefits	<i>t</i>	<i>p</i>
Release in General	2.83	2.12	6.66	<.001
Release of Property Offender	2.00	1.54	5.49	<.001
Release of Violent Offender	2.34	1.33	10.09	<.001
Release of Sexual Offender	2.49	.94	13.93	<.001

offenders, $t = 6.01$, $p < .001$. This suggests that people perceive more risks and fewer benefits to releasing violent and sexual offenders than they do for property offenders, and more risk and fewer benefits for sexual offenders than violent offenders

The risks and benefits of releasing offenders in general, and of releasing property, violent and sexual offenders respectively were coded. Risks were categorized as follows: Re-offend, Escalation of Offence, Victim, Opportunity to Breach, Society, Influence Others to Commit Crime and Other. The category of Re-offend includes responses that focus on the crime and include offences for which the offender is not caught and crimes equivalent to or lesser than the crime for which the offender is currently serving time. Responses such as “becomes a better criminal” would also fall under this heading. Escalation of Offence includes revenge attacks and responses such as “re-offending in a worse manner” and “committing more violent offences causing harm or death to public” would be classified as Escalation of Offence. The category Victim includes responses with a focus on victims and includes contacting victims, creating fear in victims, creating more victims and re-victimizing previous victims. Responses such as “may increase victims’ suffering”, “go after past victims” and “cost on victim” would fall under this category. Opportunity to Breach includes responses such as “more freedom”, “less restrictions”, and “no medication monitoring”. Influence Others to Commit Crime includes responses that describe the offender being released committing new crimes with other people. The category Society encompasses responses that focus on the risk to society or neighbourhoods and include responses such as “cost to society”, “fear in society”, “citizens perception of fairness”, “go on welfare”, and “more police wages if re-offending”. Other includes responses such as “abusing drugs

and alcohol”, “fear of offender”, “suicide of offender”, “no job opportunities”, and “harder to live (must hide)”.

Benefits were categorized as follows: Another Chance, Lesson Learned, Society, Family and Other. The category of Another Chance includes responses that focus on the offenders’ opportunity for a new life, more freedom, more access to services and opportunities for reintegration and rehabilitation. Responses such as “second chance”, “chance to have a life” and “allows the individual to reintegrate into society” would fall under this category. Lesson Learned encompasses responses that focus on the possibility that the offender may have changed and may have a new outlook. Responses that were categorized as such include, “may no longer desire or feel the need to engage in similar crimes”, “allows the individual to show that he has overcome his rape behaviour”, and “may be rehabilitated”. The category of Society within the benefits section focuses on the benefits to society of releasing the offender, such as society accepting the offender, the offender contributing to society, less cost of incarceration, less prison crowding, and the perception of society that offenders can change. Responses that fell into this category are, “treatment programs (required for parole) may help the offender to become a productive member of society”, “save prison costs”, and “may educate society about their crime path”. Family includes responses that focus on the benefits of reuniting the offender with his family and include, “see family or have a family” and “contribute financially to their family”. Other includes responses such as “research into how effective our current rehabilitation programs are”, “may not re-offend”, “may not have been guilty” and “gets them out of the prison environment”.

Table 18 shows the mean ratings for the risk and benefit categories by each type of offender (property, violent and sexual) and in total. In terms of risk, Re-offend had the highest mean endorsement of 3.45 for all three types of offender. For benefits, the item listed most often was Society ($M = 1.99$).

The number of risks and benefits and the perception and factors of risk were calculated post hoc. The correlations between the risk perception of the different crimes and the number of risks listed for the corresponding crime were calculated. The only significant correlation found was for the risk perception of Break-in and the number of risks listed for property offences, $r = .18, p < .05$. In addition, the number of risks listed for each type of offence was correlated with the Dread score for the corresponding offence(s). No significant correlations resulted.

Risk Tolerance and Instructional Set

“Risk Tolerance” is the level of risk to re-offend that an offender poses that is sufficiently low that a person is willing to release him. This was measured for property, violent, and sexual offenders on a scale of 0 to 100. Two different instructional sets were used; participants were asked to consider releasing offenders in general or to their community specifically.

Hypothesis 5 states that the amount of risk tolerance that subjects are prepared to accept will be inversely related to the number of benefits associated with releasing an offender. To test this hypothesis, correlations were computed between the number of risks and benefits identified in releasing offenders and risk tolerance for the different types of crime (see Table 19). The only significant difference found was between the

Table 18

Mean ratings for risk and benefit categories

		Property	Violent	Sexual	Total
Risks	Reoffend	.84	.82	.83	3.45
	Escalation	.23	.28	.26	1.47
	Victims	.10	.24	.26	.82
	Opportunity to Breach	.02	.04	.03	.17
	Society	.17	.33	.35	1.46
	Influence Others to commit crime	.06	.03	.02	.17
	Other	.29	.31	.34	1.52
Benefits	Another Chance	.41	.29	.19	1.43
	Lesson Learned	.17	.20	.11	.72
	Society	.49	.42	.32	1.99
	Family	.03	.03	.01	.17
	Other	.25	.22	.13	.98

Table 19

Correlations Between the Number of Risks and Benefits Identified in Releasing Offenders and Risk Tolerance

		Property Crimes Tolerance	Violent Crimes Tolerance	Sexual Crimes Tolerance
Release of Property Offender	Risks	.14	-	-
	Benefits	.14	-	-
Release Violent Offender	Risks	-	-.05	-
	Benefits	-	-.07	-
Release Sexual Offender	Risks	-	-	-.09
	Benefits	-	-	-.06
Release Offenders in General	Risks	.19*	-.02	-.02
	Benefits	.21**	-.04	-.09

Note. * $p < .05$ (two-tailed). ** $p < .01$ (two-tailed).

number of risks of releasing offenders and the number of benefits of releasing offenders in general, and property crime tolerance, $r = .19, p < .05$ and $r = .21, p < .01$, respectively.

The risk tolerance results were not consistent across participants. It appears that some of the participants did not understand what was being asked of them. For example, some participants indicated 95 or 100% was the highest level of risk for committing another sexual crime that they were prepared to accept in order to release said offender. This does not make sense and suggests that such a participant reversed his/her endorsement. That is, had they properly understood the question, they would have indicated that they would accept 0 or 5% risk for reoffending in a sexual way in order for them to agree to releasing this offender.

The results were reanalyzed without the data from participants who reversed their endorsement. The only differences that resulted were the correlations between property crimes tolerance and the risks and benefits of releasing property offenders became significant, $p < .05$.

A further hypothesis indicated that there would be significantly less risk tolerance for sexual offenders than for both violent and property offenders. t-tests were computed to examine whether there is a significant difference between the risk tolerance for the different types of crime. When the entire data set was analyzed, there was a statistically significant difference between the risk tolerance for property crimes and violent crimes, and property crimes and sexual crimes, $t = 3.80, p < .001$;

$t = 3.35, p = .001$, but not between violent crimes and sexual crimes, $t = 1.00, p > .05$.

When the reversed data was removed, there was a statistically significant difference between violent crime and sexual crime tolerance also, $t = 5.41, p < .001$.

t- tests were computed with the entire data set to look at the impact of the different instructional set on risk tolerance. It appears that instructional set impacted only participants' risk tolerance for releasing violent offenders, $t = 1.99, p = .049$ and not their risk tolerance for releasing property or sexual offenders, although the t- test approached significance for releasing the sexual offender, $t = 1.70, p = .09$.

Interestingly, when the reversed endorsement data was excluded, there were no significant differences.

Also hypothesized was that risk tolerance would be related to Risk Perception and Factor 1, Dread risk. To test this hypothesis, correlations between risk tolerance and the ratings of Perceived Risk, Factor 1 and Factor 2 were calculated (see Table 20). The hypothesis that risk tolerance for the different crimes would be strongly related to the associated Dread risk (Factor 1) was not supported. The only exception to this is the correlation between the risk tolerance for violent crimes and the dread risk of Murder, $p < .01$. The correlations between the risk tolerance for violent crimes and the Perceived Risk of Murder and Factor 2 for Murder were also significant, $p < .05$ and $p < .01$, respectively. The other significant finding was between the risk tolerance for sexual crimes and the perceived risk of Child Molestation, $p < .01$.

Table 20

Correlations Between Risk Tolerance and the Ratings of Perceived Risk, Factor 1, and Factor 2

		Perceived Risk	Factor 1 (Dread Risk)	Factor 2 (Uncertainty)
Property Crimes Tolerance	Break-in	.10	.05	.06
Violent Crimes Tolerance	Assault	.05	.01	.07
	Murder	.09*	.37**	.22**
Sexual Crimes Tolerance	Rape	.15	.06	.12
	Child Molestation	.23**	.14	-.11

Discussion

Hypothesis 1

The primary analyses in the results section suggest partial support for the factor structure of risk perception delineated by Slovic and his colleagues (1980). A two-factor structure resulted as follows. Using Slovic's methodology of calculating inter-correlations based on the averaged rating of the risk characteristics on all the hazards, the Procrustes confirmatory factor analytic procedure did not support a three factor structure. This computation was followed by the exploratory procedure of Principal Components analysis. However, these results supported a one factor solution. A second correlation matrix was computed using the average of the correlations within each hazard. The resulting correlations were then averaged across all of the risk characteristics. As before, the analysis did not support a three factor structure. The exploratory factor analytic procedure of Principal Components analysis suggested a two factor structure. The first factor included the risk characteristics of Feared, Fatal, and Number of People Exposed. The second factor comprised Consequences Not Obvious, Effects Delayed, Not Controllable, and Risks Unknown. These factors, Dread and Uncertainty, are similar to the two main factors found by Slovic and his colleagues.

These differing results are comparable to those found by Fischhoff and his colleagues (1978). These researchers employed only 30 hazards and nine risk characteristics (as supposed to the 90 hazards and 18 risk characteristics examined by Slovic and his colleagues in the research published in 1980) and the result was a two-dimensional factor structure. The discrepancy between the results of these two studies was explained in that "the particular set of hazards and the particular set of risk

characteristics under study can have an important effect on the nature of the observed 'dimensions of risk.'" (Slovic et al., 1980, p. 199). Although care was taken in the development of the present study to use a representative cross-section of both hazards and risk characteristics, it seems that this statement has proven to be true. However, some recognition should be made given that a two factor solution similar to the first two factors in Slovic's (1980) results was obtained with only twelve of the original societal hazards and with almost one third of the total number of hazards the newly introduced criminal justice hazards.

Some potential reasons for the difference in factor structure between the present study and Slovic's research include reduced variance in the present sample. Slovic's sample included a more varied cross-section of participants, while this study employed exclusively undergraduate and college students. Also, not all of the subjects in Slovic's research rated the same hazards or risk characteristics. This study examined a smaller number of hazards and risk characteristics than the original study, and this may have served to reduce the available variance. These results taken with past results suggest that while the overriding meaning behind the factors that contribute to perceived risk is similar, variability seems to be inevitable when different hazards and risk characteristics are examined and their respective numbers differ.

Hypothesis 2

All but one of the criminal justice hazards examined within this study fell, as predicted, into the high Factor 1 (Dread), low Factor 2 (Uncertainty) quadrant of the two-dimensional space, thus partially confirming a primary hypothesis of this study. The one exception to this is child molestation. This hazard fell almost on the midpoint for

Factor 2; it is located within the high Factor 1, high Factor 2 quadrant. This means that our participants are not consistent on the degree to which they believe that the effects of child molestation are preventatively controlled, on whether the consequences are obvious, the risk are known and the risks are immediate. Intuitively this makes sense. Child molestation is a unique type of crime, with a special victim population, children. Children are often told not to speak of what has happened to them, or they may be of such a young age that they are unable to communicate about the incident. In addition, even when adults are the victims of sexual assault, the consequences of such an offence are not as obvious as those of the other offences because of the nature of the offence and the intangible quality of the resulting psychological trauma. It follows that Factor 2 ratings on Consequences Not Obvious, Effects Not Immediate, Risks Unknown and Not Controllable would be higher for Child Molestation than for the other offences. While some of the effects of child molestation are immediate, obvious, and known, other effects can be long-lasting and elusive. Another consideration is that this is the one criminal justice hazard included of which the participants cannot directly be a future victim; some people may have difficulty identifying with this hazard.

Although the results suggest that people perceive the risk of criminal justice hazards in a similar fashion to general risk, in terms of scores on Factor 1 and Factor 2, Terrorism was the non-traditional criminal justice hazard that is perceived of as most similar to the criminal justice hazards. There was no significant difference on Factor 2 (Uncertainty) between terrorism, rape, break-in and assault. In fact, there were more significant differences found between criminal justice risks on Factor 1 (Dread risk), than on Factor 2 (uncertainty). Note that in Figure 4 within the two-dimensional space

terrorism is surrounded by rape (closest), murder and child molestation. This is an interesting finding, although terrorism can be viewed as a criminal act, it does not fit neatly into our sample of criminal justice hazards. Terrorism is not a frequent occurrence, at least not in our society, but its effects can be far-reaching (for example the terrorist attacks in the United States in September 2001). Terrorism, although always an issue somewhere in the world, has touched North America more closely in recent years. We can surmise that heuristics are likely at play when considering the perceived risk of terrorism. Specifically, the availability heuristic: the availability of acts of terrorism in people's memories has likely increased since the terrorist attacks in United States in September 2001.

Murder may be somewhat of an outlier when compared with the other criminal justice hazards because of its uniqueness within this category. Murder is the most extreme offence that ends the life of another. It makes intuitive sense that its location within the two factor space would be higher on both factors, Dread and Uncertainty. Murder also stands alone relative to all the hazards examined in the two-factor space; this was confirmed with t-tests comparing those hazards that appear to be located closest to murder. This instinctively makes sense because while assault and other person-focused crimes can be devastating, none include the conclusiveness of ending a life. The reason that murder is so much higher on Factor 1 is because of the inclusion of the rating "Fatal" in this factor. By definition, murder is fatal. In addition, people tend to have the misconception that murder happens unexpectedly in the dark of night, committed by someone who is unknown to the victim (high Factor 2, or Uncertainty). However, it is generally accepted that murder is more often than not committed by

someone close to the victim. When considering the mean ratings on the individual risk characteristics, murder was highest on Fatal, Consequences Obvious and Effects Immediate; all logical results.

Hypothesis 3

The third hypothesis of this study was that the mean participant frequency ratings of criminal behaviour will be an overestimation when compared with actual crime statistics and that the discrepancy between the mean of participant frequency ratings of sexual crimes involving children and frequency ratings based on actual statistics will be the greatest. The difference between frequency ratings of sexual crimes in general was hypothesized to be the most over-estimated. These hypotheses were supported.

Consistent with this hypothesis, participants overestimated the frequency of all of the criminal justice hazards. The difference between mean estimates and actual rates of break-ins is approximately double ($M = 1,129.3$ versus actual rate of 585.6). However, the difference between the frequency estimates of murder, rape, and child molestation and the actual rates of these three crimes is great. For murder, the mean estimate is 57.6 and the actual rate is 1.1. For rape, the mean estimate is 506.9 and the actual rate is 22.4. For child molestation the mean estimate is 344.5, with an actual rate of 14.4.

Murder is an extreme crime, a crime that would likely stand out significantly in one's memory, which suggests that the availability heuristic may be at work when considering murder. This finding is consistent with the results of a study by Lichtenstein and his colleagues (1978) that lethal events that are dramatic and sensational were

overestimated when compared with unspectacular events. Also related to this finding, a study that examined the perception of crime in the United States found that network TV news variables accounted for almost four times the amount of variance in the perception of crime as the most important problem facing the US than did actual FBI crime rates (Lowry, Nio, & Leitner, 2003). With respect to the mean estimate for rape and child molestation, the history of a sexual offence has been found to be a significant factor in decisions to detain offenders (Nugent, 2000). It follows then that sexual offences are perceived of as deserving more strict management than non-sexual offences. Our results are consistent with this perception.

It should also be noted that the “actual” rates of sexual offences are likely an underestimation of the real number of incidents. In fact, a recent victimization survey undertaken by Statistics Canada found that 78% of sexual assaults were not reported to the police (taken from Canadian Crime Statistics 2003). In particular, child molestation, by its very nature is elusive. There is a secretiveness often associated with this crime and because many incidents of child molestation likely go undetected and unreported. The results of this study found that people who estimated the frequency of child molestation as high also rated the perceived risk of child molestation as high. These may be the people who are touched by this crime in some way, either a victim him/herself or having a close relationship to a victim of this crime.

Hypothesis 4

The hypothesis that participants will list a significantly greater number of risks than benefits when they consider releasing an offender to the community was confirmed. The wide publicity of failed offender releases may be a factor in this finding,

which supports the belief that people are more likely to focus on the risks of releasing offenders than the benefits. Specifically, participants endorsed the risk to re-offend most; this is people's perception of the ultimate risk. In general, the responses in this section suggest that participants do not appreciate that number of offenders whose release is revoked prior to a new offence, because of a breach of conditions. In terms of benefits, our sample most often endorsed the category of Society. People may not perceive personal benefits to releasing offenders, but they believe that there are societal benefits. The media, in general, does not report the thousands of successful releases that occur each year. Given the general public's perception that the criminal justice system is lenient on criminals (Doob & Roberts, 1983; Sacco & Johnson, 1990), it is likely that this general view is applied to individual cases (the representativeness heuristic) and that the risks posed by offenders outweigh the benefits of releasing them.

The non-significant results found when correlations were calculated between the risk perception of the different crimes and the number of risks listed suggest that awareness of the risks and benefits of criminal justice risks are not related to risk perception. Unfortunately, Slovic and his colleagues (1980) and Fischhoff and his colleagues (1978) did not examine risks and benefits in a manner similar to the present study. Therefore comparisons cannot be made in this regard.

Although difficult to measure, participants' responses in this section suggest that people have an objective, intellectual knowledge that there are benefits to releasing offenders. However, when asked to consider the risk, there appears to be a more emotional or visceral response, similar to those affective reactions described by Zajonc

(1980). Consideration of the risks of releasing offenders seems to be tagged with negative emotions, while the benefits are tagged with more neutral feelings.

Hypothesis 5

We hypothesized that the amount of risk tolerance that subjects are prepared to accept will be inversely related to the number of benefits associated with releasing an offender. More specifically, we believed that significantly less risk tolerance for sexual offenders will be identified than for both violent and property offenders. The amount of risk tolerance that subjects are prepared to accept for violent offenders will be less than that of property offenders. These hypotheses were not supported. A successive hypothesis, that risk tolerance for the different crimes will be strongly related to the associated dread risk of the crime, was partially supported. When murder was considered, the risk tolerance for violent crimes was significantly related to Factor 1, Dread risk, but also to Factor 2, Uncertainty.

In considering these results, we should reiterate our observation that participants had difficulty understanding the section on risk tolerance. Many reversed their endorsements, indicating that the higher the likelihood to re-offend, the more likely they would release the offender. These results are unclear and therefore it is difficult to draw conclusions. Future research on risk tolerance should include an example of what it means to endorse different percentages when considering the release of offenders.

Victimization and Gender Effects

When victim and non-victims were compared on their endorsement of the items, only a few significant differences were found. With the exception of assault victims, victimization did not result in significantly greater estimates of the frequency of the

respective crimes. These findings are somewhat in keeping with the results of a study by O'Connell and Whelan (1996). Although these researchers looked at the change in frequency of offences and not the static rate of offences as we did, their findings are related to those of the present study. In fact the victims within their sample tended to estimate less of an increase in the frequency of offences than non-victims. In their examination of victim effects, O'Connell and Whelan also divided the offences into "personal" crime and "property" crime, but no differences emerged. The question to be answered is why do Assault victims solely tend to overestimate the frequency of assault? Assault is one of several interpersonal crimes that we examined, so this cannot be the defining factor. More research is needed to clarify this finding.

Gender differences on Factor 1 were found for break-in, assault, murder and rape. Females appear to express greater fear than males. Related findings include O'Connell and Whalen (1996) study that found that females have higher estimates of the increase of crime prevalence. The perception that crime is increasing at a high rate could possibly lead to greater dread of crime. It has been repeatedly found that females are more fearful of being victimized by crime (for example, Ferraro, 1996). However, Reid and Konrad (2004) have found an interaction between gender, perceived risk, and fear of crime. Specifically, they looked at a crime that primarily targets women, sexual assault, a crime that victimizes men disproportionately, robbery, and burglary, a gender-neutral crime. In short, no gender effect was found for burglary; gender is directly related to fear of sexual assault (women are more significantly more fearful); and lastly, a higher perceived risk of robbery is associated with a higher level of fear in men than in women.

Zwick (2005) examined the perception and evaluation of risks, including crime, although crime was only looked at in terms of personal and societal threat. The other hazards included in this study were climate change, BSE (also known as mad cow disease), genetically modified food, nuclear power, and mobile technology. Results of this study reveal that people perceive crime as more of a societal risk than a personal one; this finding was also true for the other hazards examined. The author hypothesized that “most perceived aspects of risk rely on components of risk communication in the media and public discourse than on primary experiences in everyday life” (p. 488). One limitation to this study that specifically decreases our ability to compare the results with the present study is that it did not look at specific crimes. This general approach may have decreased the participants’ ability to envision specific crimes and only think of crime on a global scale. Interestingly, these researchers did attempt to reduce their ten risk characteristics using factor analysis; however, the results did not support fewer dimensions. The authors conclude that when people are allowed to think “freely and spontaneously” (p.493) about risk, the availability of information regarding the risk of hazards is limited unless experienced on a daily basis.

Limitations and Direction for Future Research

Sample

The current study has a number of limitations which direct us to suggestions for future research. First, this study used student participants, which raises the question of generalizability to the general public. However, several studies in the related area of attitudes and sentencing decisions have used both university undergraduates and random community samples and yielded comparable results. For example, Stalans and Diamond

(1990) found no significant differences between a university student sample and a community sample in their evaluation of the severity of judges' sentences and subsequent mock sentencing for burglary. Similarly, Sanderson, Zanna and Darley (2000) looked at the attributions of offender dangerousness and ratings of crime severity in both student and community samples, with few or no differences in endorsements. Bornstein (1999) conducted a meta-analysis and concluded that among the majority of jury simulation studies, no consistent differences have been found between community and student samples, with the exception of a few studies that have found students to be more lenient. Therefore, it is suggested that this student sample provides a good representation of the general public. However, only a replication of this research with a community sample could unequivocally support this assertion.

Variables examined

This study sought to better understand the perception of risk of criminal justice hazards with an ultimate aim to better communicate risk assessment results. Although this study offers a preliminary look at our perception of risk of a variety of crimes as they relate to the risk of general hazards, a similar study carried out with a more diverse sample of variables would add to the generalizability of the results. A larger sample of societal hazards as well as more detail in the description of the criminal justice hazards would help to further understand the intricacies of people's perceptions of risk of criminal justice hazards. To further add to the practical use of such risk perception research, it would be valuable to conduct similar research using a sample of participants who are actual consumers of risk information, for example, parole board members. If and when this task is undertaken, particular attention should be paid to the presentation

format of the risk information because of the knowledge that experts are more susceptible to this aspect of risk communication (Slovic et al., 1980). A replication of the current study with a broader sample would strengthen the applicability of the current results.

The hazards used in the present study were not explicitly described, which leaves room for subjective interpretation of the definitions. For example, child molestation may be considered by some to be only when there has been actual sexual contact or intercourse. However, especially given the advent of the internet, others may consider less direct contact to be child molestation. Future research should more specifically define the hazards of interest. Related to this issue, in retrospect it is regrettable that the term rape was used as a criminal justice hazard. The offence of “rape” is no longer used in the Canadian Criminal Code; it has been replaced by the label “sexual assault”. However, the term rape is likely to be reserved for sexual assaults that involve penetration only, whereas sexual assault encompasses a larger range of sexual offences. Future research should use terms consistent with the Canadian Criminal Code and should be specific in terms of the type of sexual offence to be considered.

In our examination of the risks and benefits of releasing offenders, our case scenarios involved limited information regarding both the offender and the crime committed. Adding more crime details and personal information regarding the offender being considered would further enhance our understanding of people’s perceptions of offenders and crimes. People who use risk assessment information usually have the benefit of much more detail of the offence and a rich description of the offender. Adding

this variability in future research would better mimic real life events and again, add to the generalizability of the results.

The order of presentation of the sections of the study materials was not varied. It is possible that the participants were “primed” by the questions asked before the estimations of criminal justice ratings. This presentation effect could also have affected the responses given in the risk tolerance section; questions about past victimization preceded the risk tolerance section and could have affected responses.

The study materials were based on previously published research (Slovic et al., 1980) and care was taken to maintain the integrity of the questions regarding risk characteristics. However, this resulted in a highly repetitive questionnaire, with some questions difficult to understand or even nonsensical. For example, “To what extent is (are) the risk(s) associated with DNA research unknown to those who are exposed to it”. How is one exposed to DNA research? Another example, “to what extent is murder likely to be fatal”, does not make logical sense.

The importance of risk communication was part of the justification given for this line of research; however, due to the preliminary nature of the present study, no definitive statements can be made in this regard. We know that students perceive the risk of the five criminal justice hazards examined in a similar and predictable manner. We also know that dread is the dominant factor in our perception of risk, with respect to the amount of explanatory power, and criminal justice hazards are high on this factor. These findings suggest that communicating the risk of future criminal behaviour should perhaps be done in a manner which minimizes this influence within the perception of risk by framing the risk information in terms of likelihood of success rather than failure.

More research is needed to examine differences in the presentation of risk information and how this affects perception of risk.

Definitions of risk

The ultimate goal of this study was to add to the knowledge of how people perceive the risk information contained in criminal risk assessments. However, there are many steps needed to link the research between the general public's perception of risk and an experts' perception of a criminal risk assessment. Most importantly, the definition of risk contained within a criminal risk assessment represents the risk to re-offend, whereas risk as examined in this study contains many other factors. We know that experts are as susceptible as lay people to errors in inference based on the misuse of knowledge structures and judgemental heuristics (for example, Nisbett & Ross, 1980). Research is needed to ascertain whether this observation holds true in the case of expert consumers of criminal risk assessments. Are these professionals considering the risk to re-offend only, or are other factors affecting the decisions made with the risk information given? Future research should attempt to link the findings of this study that perceived risk is quantifiable and predictable, to better delineate whether perceived risk is contributing to decisions made based on risk assessment information.

Hilton, Harris, Rawson and Beach (2005) have recently added to the knowledge of how to improve violence risk communication and have shown the importance of case information. They examined the decisions of 60 forensic clinicians and how case information, a likelihood of violent recidivism statement and actuarial risk level effected these decisions. They found that in the absence of a likelihood statement, case information containing risk factors was used to assess risk. However, a likelihood

statement served to improve risk decisions (higher risk cases were referred for greater supervision than lower risk cases). Clinicians were more likely to defer a decision in the absence of a likelihood statement. Frequency statements did not result in greater accuracy than probabilistic statements. Participants estimated comparative risk as equivalent to likelihood. Research that links the perception of risk of crime and the practical use of risk assessment information is essential.

Conclusions

With only twelve societal hazards and five criminal justice hazards, we found a two-factor structure of risk perception similar to that produced by Slovic and his colleagues (1980). The first factor, Dread risk, is about fear; people are afraid of criminal acts. This fear of criminal acts is comparable to their fear of terrorism. The second factor, Uncertainty, suggests that the more the risk is unknown and illusive, the more people fear that risk. People's perception of the risks of societal hazards, which now include criminal justice hazards, is relatively consistent, predictable, and quantifiable. The results of this research put people's fear of criminal behaviour in the context of different crimes and relative to the perception of risk of other societal hazards. Having a better understanding of people's perception of risk of different crimes gives us insight as to why the public are so afraid of sex offenders, despite the fact that this subclass of offenders has low base rates for re-offending.

The results of this study also confirm that people tend to overestimate the rate of crime; however, these estimates of the rate of different crimes do not appear to be consistently linked with the dread factor, uncertainty or their perceived risk of the crimes. In addition, the results show that awareness of the risks and benefits of releasing

offenders is not related to the perception of risk of criminal justice hazards. Being a victim of crime does not tend to increase the perceived risk, the amount of dread risk of the uncertainty of the crime. In fact, gender differences are more evident than differences between victims and non-victims. Perhaps future research on the communication of criminal risk should consider this apparent gender sensitivity. Of particular importance, given the findings of this research, much care should be taken when presenting risk information in the form of percentages. Many of the participants in this study reversed their endorsement of the acceptable level of risk to release an offender; a mistake that could be devastating in the real world.

This study offers a preliminary understanding of people's perceptions of criminal justice hazards. The perception of the risk of crime is quantifiable and predictable within the context of a two-factor explanation. More research is needed to link people's perception of risk to their decision-making behaviour in the face of a criminal risk assessment, especially given the evidence that the public's perception of risk has a direct effect of public policy.

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Appendices

Appendix A

Informed Consent Form

Project: The perception of risk of common and criminal justice hazards

Investigator: Katherine Green, Department of Psychology, Carleton University

The purpose of this informed consent form is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide you with enough information such that you have the opportunity to determine whether you wish to participate in this study. Please ask the researcher to clarify any concerns that you may have.

I, _____ have been asked to participate in a research study designed to evaluate the perception of risk. The research is being conducted by Kate Green, under the supervision of Dr. Jeremy Mills and Dr. Don Andrews from the Department of Psychology, Carleton University, as part of the requirements for her M.A.

Participation in this study involves answering a series of questions regarding the perception of the risk posed by various hazards. Participation in the study will take approximately 50 minutes. Some of the content surrounds criminal offences and past victimization which you may find distressing.

All information that I provide in this study will be confidential. If while participating in this study you decide that you do not wish to continue, you may do so.

If you have any concerns, you may contact the Chair of the Psychology Ethics Committee, Dr. Chris Davis (613) 520-2600 ext. 2251 or the Chair of the Department of Psychology, Dr. Mary Gick (613) 520-2600 ext. 2648.

I have read the above statement and freely consent to participate in this study.

Signature of Participant

Signature of Witness

Date

Appendix B

Debriefing Form

Thank you very much for agreeing to take part in this project. This research is being carried out as part of a Master's thesis in Psychology by the researcher Kate Green (613) 536-6760 under the supervision of Professor Jeremy Mills (613) 351-8399 and Professor Don Andrews (613) 520-2600 ext. 2662 of Carleton University. If you have any questions about the study, you may ask the researcher or contact either professor at Carleton University. If you have any ethical concerns, you may contact the Chair of the Psychology Ethics Committee, Dr. Chris Davis (613) 520-2600 ext. 2251 or the Chair of the Department of Psychology, Dr. Mary Gick (613) 520-2600 ext. 2648.

The purpose of this research was to examine the factors that comprise individuals' perception of risk and how different hazards related to each other. If you have found any part of this research to be distressing and feel the need to discuss these or related issues you can contact Carleton University's Health and Counselling Services at (613) 520-6674.

Risk Variable - Aspirin

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does the use of aspirin create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of the use of aspirin preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is the use of aspirin likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with the use of aspirin obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is(are) the risk(s) associated with the use of aspirin unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of the use of aspirin immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of the use of aspirin.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Home Appliances

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does the use of home appliances create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of the use of home appliances preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is the use of home appliances likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with the use of home appliances obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is(are) the risk(s) associated with the use of home appliances known to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of the use of home appliances immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of the use of home appliances.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Terrorism

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does terrorism create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of terrorism preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is terrorism likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with terrorism obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with terrorism unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of terrorism immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of terrorism.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Nuclear Power

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does nuclear power create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of nuclear power preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is nuclear power likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with nuclear power obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with nuclear power unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of nuclear power immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of nuclear power.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Home Break-in

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does a home break-in create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of a home break-in preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is a home break-in likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with a home break-in obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with a home break-in unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of a home break-in immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of a home break-in.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Sunbathing

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does sunbathing create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of sunbathing preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is sunbathing likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with sunbathing obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with sunbathing unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of sunbathing immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of sunbathing.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Alcoholic Beverages

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent do alcoholic beverages create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of the use of alcoholic beverages preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is the use of alcoholic beverages likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with the use of alcoholic beverages obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with the use of alcoholic beverages unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of the use of alcoholic beverages immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of the use of alcoholic beverages.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Being Physically Assaulted

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does being physically assaulted create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of being physically assaulted preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is being physically assaulted likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with being physically assaulted obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with being physically assaulted unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of being physically assaulted immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of being physically assaulted.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Pesticides

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does the use of pesticides create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of the use of pesticides preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is the use of pesticides likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with the use of pesticides obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with the use of pesticides unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of the use of pesticides immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of the use of pesticides.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Murder

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does murder create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of murder preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is murder likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with murder obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with murder unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of murder immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of murder.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Firefighting

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does firefighting create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of firefighting preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is firefighting likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with firefighting obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with firefighting unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of firefighting immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of firefighting.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Food Preservatives

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does the use of food preservatives create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of food preservatives preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is the use of food preservatives likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with the use of food preservatives obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with the use of food preservatives unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of the use of food preservatives immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of the use of food preservatives.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Rape

1. Perceived risk to me personally or to someone close to me (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does rape create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of rape preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is rape likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with rape obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with rape unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of rape immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of rape.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Skateboards

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent do skateboards create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of the use of skateboards preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is the use of skateboards likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with the use/ of skateboards obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with the use of skateboards unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
--------------------------------------	---	---	---	---	---	---	---	--

7. To what extent are effects of the risk of the use of skateboards immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of the use of skateboards.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - DNA research

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does DNA research create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of DNA research preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is DNA research likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with DNA research obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with DNA research unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of DNA research immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of DNA research.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Child Molestation

1. Perceived risk to me personally or to someone close to me (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does child molestation create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of child molestation preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is child molestation likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
----------------------------	---	---	---	---	---	---	---	---------------------------

5. To what extent are the negative consequences associated child molestation obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with child molestation unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
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7. To what extent are effects of the risk of child molestation immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of child molestation.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Risk Variable - Open-heart Surgery

1. Perceived risk to me personally (0 - 100)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. To what extent does open heart surgery create fear.

Very little feared	1	2	3	4	5	6	7	Very greatly feared
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3. To what extent are the negative consequences of open heart surgery preventatively controlled.

Little preventative control	1	2	3	4	5	6	7	Much preventative Control
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4. To what extent is open heart surgery likely to be fatal.

Unlikely to be fatal	1	2	3	4	5	6	7	Certain to be fatal
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5. To what extent are the negative consequences associated with open heart surgery obvious.

Consequences are not obvious	1	2	3	4	5	6	7	Consequences are obvious
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6. To what extent is (are) the risk(s) associated with open heart surgery unknown to those who are exposed to it.

Risk is known to those exposed	1	2	3	4	5	6	7	Risk is unknown to those exposed
--------------------------------------	---	---	---	---	---	---	---	--

7. To what extent are effects of the risk of open heart surgery immediate to those exposed to them.

Effects of risk are not immediate	1	2	3	4	5	6	7	Effects of risk are immediate
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8. To what extent are many people exposed to the risk of open heart surgery.

Few people exposed to this risk	1	2	3	4	5	6	7	Many people exposed to this risk
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Section 2: Participant estimates of CJS ratings (per 100,000)

Please provide your best estimate of frequency ratings of the following criminal behaviour. For example the suicide rate in Canada is approximately 12.3 per 100,000 people and the death by motor vehicle accidents are approximately 10 per 100,000 people each year.

Home broken into	_____	per 100,000 each year
Physically assaulted	_____	per 100,000 each year
Murder	_____	per 100,000 each year
Rape	_____	per 100,000 each year
Child molestation	_____	per 100,000 each year

Section 3: Past Victimization

Please indicate if you have been victimized and if so how long ago it occurred.

Personally had home broken into
 YES | NO | If YES, how long ago ____ Years ____ Months

Personally been physically assaulted
 YES | NO | If YES, how long ago ____ Years ____ Months

Murder of close friend of family member

YES NO If YES, how long ago ____ Years ____ Months

Rape personally or of close friend or family member

YES NO If YES, how long ago ____ Years ____ Months

Child molestation personally or of close friend of family member

YES NO If YES, how long ago ____ Years ____ Months

Section 4: General knowledge of risk and benefits to releasing offenders

Each day parole boards make decisions to either release or detain prisoners. These people consider both the risks and the benefits both to society and the person when making these decisions. Please list as many risks and benefits to releasing a prisoner as you can think of.

Risks:

Benefits:

Section 5: Risk tolerance for Criminal Justice variables

[THIS SECTION WILL HAVE ONE OF TWO INSTRUCTIONAL SETS DIVIDED EQUALLY AMONG THE PARTICIPANTS]

#1

The likelihood that an offender will commit a crime is considered by parole boards when releasing prisoners to the community. What level of risk tolerance are you prepared to accept in the following cases.

#2

The likelihood that an offender will commit a crime is considered by parole boards when releasing prisoners to the community. What level of risk tolerance are you prepared to accept in the release of an offender to your community in the following cases.

1. An offender who has committed property offences is before the parole board and asking to be released. What is the highest level of risk for committing another property crime are you are prepared to accept in order to say yes to releasing him?

Percent Likelihood to Reoffend (Circle one only)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

2. A violent offender is before the parole board and asking to be released. What is the highest level of risk for re-offending in a violent way are you are prepared to accept in order to say yes to releasing him?

Percent Likelihood to Reoffend (Circle one only)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

3. A rapist is before the parole board and asking to be released. What is the highest level of risk for re-offending in a sexual way are you are prepared to accept in order to say yes to releasing him?

Percent Likelihood to Reoffend (Circle one only)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Section 6: Specific knowledge of risk and benefits to releasing offenders

Please list as many risks and benefits to releasing a prisoner who has committed the following crimes.

1. An offender who has committed property offences is before the parole board and asking to be released. Please list as many risks and benefits as you can think of to releasing this prisoner.

Risks:

Benefits:

2. A violent offender is before the parole board and asking to be released. Please list as many risks and benefits as you can think of to releasing this prisoner.

Risks:

Benefits:

3. A rapist is before the parole board and asking to be released. Please list as many risks and benefits as you can think of to releasing this prisoner.

Risks:

Benefits:

Appendix D

*List of Societal Hazards Examined in this Study*Hazards

- | | |
|-------------------------------|------------------------|
| 1. Aspirin | 10. Murder |
| 2. Home Appliances | 11. Firefighting |
| 3. Terrorism | 12. Food Preservatives |
| 4. Nuclear Power | 13. Rape |
| 5. Home Break-in | 14. Skateboards |
| 6. Sunbathing | 15. DNA Research |
| 7. Alcoholic Beverages | 16. Child Molestation |
| 8. Being Physically Assaulted | 17. Open-Heart Surgery |
| 9. Pesticides | |

Risk Characteristics (abbreviations used in text are in parentheses)

1. Perceived risk to me personally (**Perceived Risk**)
2. To what extent does the use of [enter hazard here] create fear. (**Fear**)
3. To what extent are the negative consequences of the use of [enter hazard here] preventatively controlled. (**Preventative Control**)
4. To what extent is the use of [enter hazard here] likely to be fatal. (**Fatal**)
5. To what extent are the negative consequences associated with the use of [enter hazard here] obvious. (**Consequences Obvious**)
6. To what extent is (are) the risk(s) associated with the use of [enter hazard here] known to those who are exposed to it. (**Risks Known**)
7. To what extent are effects of the risk of [enter hazard here] immediate to those exposed to them. (**Effects Immediate**)
8. To what extent are many people exposed to the risk of [enter hazard here]. (**Number of People Exposed**)

Appendix E

Table E1

Victim/Non-Victim Differences in Risk Ratings of Break-ins

		Victim	Non-Victim	t	p
	1. Perceived Risk	51.00	41.52	-1.74	.08
Factor 1 (Dread risk)	2. Fatal	3.17	3.36	.66	.51
	3. Feared	5.00	4.75	-.71	.48
	4. Number of People Exposed	5.31	4.74	-1.86	.06
Factor 2 (Uncertainty)	5. Consequences Obvious	5.58	5.43	-.53	.60
	6. Effects Immediate	5.47	5.26	.77	.44
	7. Risks Known	2.86	3.22	1.18	.24
	8. Preventatively Controlled	4.39	4.38	-.05	.96

Table E2

Victim/Non-Victim Differences in Risk Ratings of Assault

		Victim	Non- Victim	t	p
	1. Perceived Risk	48.33	37.76	-1.88	.06
Factor 1 (Dread risk)	2. Fatal	4.14	4.33	.69	.49
	3. Feared	5.11	4.69	-1.11	.27
	4. Number of People Exposed	4.36	4.49	.47	.64
Factor 2 (Uncertainty)	5. Consequences Obvious	5.36	5.36	-.02	.99
	6. Effects Immediate	5.39	5.24	-.54	.59
	7. Risks Known	3.28	2.90	-1.27	.21
	8. Preventatively Controlled	3.72	3.87	.48	.64

Table E3

Victim/Non-Victim Differences in Risk Ratings of Murder

		Victim	Non- Victim	t	p
	1. Perceived Risk	36.53	30.77	-.96	.34
Factor 1 (Dread risk)	2. Fatal	6.75	6.65	-.49	.62
	3. Feared	5.72	5.25	-1.18	.24
	4. Number of People Exposed	4.31	4.91	-1.17	.25
Factor 2 (Uncertainty)	5. Consequences Obvious	6.56	6.49	-.33	.75
	6. Effects Immediate	6.06	6.21	.58	.56
	7. Risks Known	3.28	2.68	-1.50	.14
	8. Preventatively Controlled	3.89	3.87	-.06	.95

Table E4

Victim/Non-Victim Differences in Risk Ratings of Rape

		Victim	Non- Victim	t	p
	1. Perceived Risk	48.47	13.20	-.82	.42
Factor 1 (Dread risk)	2. Fatal	4.47	4.50	.08	.94
	3. Feared	5.75	5.49	-.67	.50
	4. Number of People Exposed	4.75	4.41	-1.13	.26
Factor 2 (Uncertainty)	5. Consequences Obvious	5.33	5.64	.99	.33
	6. Effects Immediate	5.03	5.66	2.22	.03
	7. Risks Known	3.25	2.80	-1.45	.15
	8. Preventatively Controlled	3.31	3.66	1.11	.27

Table E5

Victim/Non-Victim Differences in Risk Ratings of Child Molestation

		Victim	Non- Victim	t	p
	1. Perceived Risk	46.04	35.88	-1.57	.12
Factor 1 (Dread risk)	2. Fatal	3.58	4.11	1.54	.12
	3. Feared	5.67	5.35	-.89	.38
	4. Number of People Exposed	4.44	4.44	-.01	.99
Factor 2 (Uncertainty)	5. Consequences Obvious	5.03	5.24	.59	.55
	6. Effects Immediate	4.58	4.70	.35	.73
	7. Risks Known	4.83	3.99	-2.54	.01
	8. Preventatively Controlled	3.44	3.86	1.26	.21

Table E6

Gender Differences in Risk Ratings of Break-ins

		Male	Female	t	p
	1. Perceived Risk	46.04	42.69	.62	.49
Factor 1 (Dread risk)	2. Fatal	3.33	3.29	.16	.88
	3. Feared	4.22	5.09	-2.88	.01
	4. Number of People Exposed	4.41	5.03	-2.35	.02
Factor 2 (Uncertainty)	5. Consequences Obvious	5.07	5.58	-1.93	.06
	6. Effects Immediate	4.89	5.50	-2.46	.02
	7. Risks Known	3.37	3.01	1.34	.18
	8. Preventatively Controlled	4.13	4.47	-1.29	.20

Table E7

Gender Differences in Risk Ratings of Assault

		Male	Female	t	p
	1. Perceived Risk	35.00	43.22	-1.63	.11
Factor 1 (Dread risk)	2. Fatal	3.54	4.70	-4.99	.00
	3. Feared	3.67	5.39	-5.70	.00
	4. Number of People Exposed	4.06	4.68	2.65	.01
Factor 2 (Uncertainty)	5. Consequences Obvious	5.06	5.45	-1.45	.15
	6. Effects Immediate	5.15	5.34	-.79	.43
	7. Risks Known	2.83	3.05	-.80	.43
	8. Preventatively Controlled	4.22	3.67	2.06	.04

Table E8

Gender Differences in Risk Ratings of Murder

		Male	Female	t	p
	1. Perceived Risk	29.23	33.40	-.77	.45
Factor 1 (Dread risk)	2. Fatal	6.39	6.78	-2.19	.03
	3. Feared	4.92	5.58	-1.85	.07
	4. Number of People Exposed	3.78	4.11	-1.10	.27
Factor 2 (Uncertainty)	5. Consequences Obvious	6.11	6.71	-3.67	.00
	6. Effects Immediate	6.02	6.32	-1.36	.18
	7. Risks Known	2.91	2.64	.76	.45
	8. Preventatively Controlled	4.00	3.76	.82	.41

Table E9

Gender Differences in Risk Ratings of Rape

		Male	Female	t	p
	1. Perceived Risk	37.74	48.16	-1.81	.07
Factor 1 (Dread risk)	2. Fatal	3.91	4.81	-3.43	.00
	3. Feared	4.63	6.07	-4.50	.00
	4. Number of People Exposed	4.15	4.62	-1.80	.08
Factor 2 (Uncertainty)	5. Consequences Obvious	5.48	5.68	-.73	.47
	6. Effects Immediate	5.41	5.67	-1.06	.29
	7. Risks Known	2.74	2.94	-.74	.46
	8. Preventatively Controlled	3.78	3.50	.97	.33

Table E10

Gender Differences in Risk Ratings of Child Molestation

		Male	Female	t	p
	1. Perceived Risk	32.88	40.47	-1.32	.19
Factor 1 (Dread risk)	2. Fatal	3.80	4.09	-1.00	.32
	3. Feared	5.06	5.65	-1.95	.05
	4. Number of People Exposed	4.31	4.51	-.78	.44
Factor 2 (Uncertainty)	5. Consequences Obvious	5.28	5.19	.27	.79
	6. Effects Immediate	4.69	4.66	.09	.93
	7. Risks Known	4.31	4.08	.78	.43
	8. Preventatively Controlled	3.98	3.66	1.10	.27

Table E11

Correlations Between the Number of Risks and Benefits Identified in Releasing Offenders and Risk Tolerance without reversed endorsements

		Property Crimes Tolerance	Violent Crimes Tolerance	Sexual Crimes Tolerance
Release of Property Offender	Risks	.20*	-	-
	Benefits	.20*	-	-
Release Violent Offender	Risks	-	-.06	-
	Benefits	-	.07	-
Release Sexual Offender	Risks	-	-	.05
	Benefits	-	-	.16
Release Offenders in General	Risks	.19*	-.03	.05
	Benefits	.29**	.11	.11

** $p < .01$ (two-tailed)

* $p < .05$ level (two-tailed)