The relationship between likelihood and fear of criminal victimisation: evaluating risk sensitivity as a mediating concept

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The relationship between likelihood and fear of criminal victimisation: Evaluating risk sensitivity as a mediating concept

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Introduction

This is not the first time that attention has been drawn to the fact that fear of crime surveyors typically include in their questionnaires a set of questions that ask respondents how likely each thinks it is that they will become a victim of one or other named crimes in the subsequent year (Ditton & Chadee, 2006). In the UK, questions like this were first tried in the British Crime Survey because one of the original designers wished to contrast what he referred to as "actual and perceived risks".[4]

The idea that actual (or objective) risks can be compared with perceived (or subjective) risks is both well established and, by many, staunchly defended. One thing is unarguably true, as we shall see, and that is that far more people believe that they will become a future victim of a nominated offence than, in fact, transpire to become so.

A problem emerges for those who suspect that there is something amiss here, and that, looked at in this way, there is accordingly "too much" perceived risk. Indeed, this is an important issue as reducing perceived risk to levels that match objective reality (as measured by police recorded or survey collected victimisation rates) has become a cornerstone of UK government crime control policy (the National Reassurance Policing Programme) in which substantial public funds have been invested.

However, it isn't clear in what sense perceived risk should be reduced. Is it that many people should reduce their subjective risk rating a little, or that a few people should reduce it a lot? This is an important yet typically unaddressed issue. The conventional view is that there is too much perceived risk is perhaps illustrated by row 6 of Table 3 (below). Here, between 42% and 45% of Trinidadians believe that they are "likely" or "very likely" to be murdered in the following 12 months at each of three times the sample was questioned. About 0.0001% of Trinidadians are actually murdered every year.[5]

In standard recoding, those perceiving the risk to be "very likely" are added to those perceiving it to be "likely", and those perceiving the risk to be "very unlikely" are added to those perceiving it to be "unlikely". There isn't much point in policy persuading the "very likelys" to become "likelys" as this won't affect the result (although if perceived risk reduction is the goal, this would be a significant if unrewarded achievement). To be a noticeable effect, unfeasibly large numbers of "likelys" must be persuaded to become "unlikelys".

In addition, a moral issue may be of concern. Maybe the frequency of murder is so low in Trinidad because the perception that is likely is held by so many. Possibly, the

[4] Michael Hough, personal communication.

[5] In 1999, 120 murders were recorded by the police in Trinidad. Trinidad has a population of 1.3 million. To put this in context, in 1999 585,000 Trinidadians thought it likely that they would be murdered. It happened to 120. So, 99.8% of those expecting to die were cruelly disappointed. People's attitudes to murder are just an extreme case of a well-observed trend: viz, people rate undesirable and involuntary events as more likely than desirable and voluntary ones (Slovic, 1995: xxxii, 26). It is also well established that people overestimate the frequency of rare events and underestimate the frequency of common ones.

frequency of murder might increase if fewer people thought it likely. This is conjectural at best but it does point to the idea that seeking to reduce levels of perceived risk may not unquestionably generate, if successful, a societal benefit.

Indeed, it is arguable that anybody should reduce their risk self-ratings at all. This is the case as the concept of objective risk wilts under scrutiny. We take the subjective/objective risk pair to mean that if the percentage of some sample who think it is "likely" that they will be a victim of a particular crime is, for the sake of illustration, 20%, but that other data indicates that only 5% of the population from which the sample is drawn actually become victims each year, then 75% of those who think they are at risk, are worrying needlessly.[6]

The problem is that the disjunction between objective and subjective risk is illusory. It is in no sense individually or collectively irrational for all of a given population to feel that there is some degree of likelihood that they will become a victim even though only a tiny proportion will actually become so. Until victimisation is inflicted on the few to which it eventually is, how can anybody know who should predict it for themselves?

As Young put it, many years ago:

"The exercise of relating an objective crime rate to a subjective level of fear is, from a realist perspective, flawed, because it assumes: that rationality would involve each subgroup of society having a fear of crime rate proportional to their risk rate; [and] that there is an objective crime rate irrespective of the subjective assessment of various subgroups" (1988: 173).

Another problem surfaces here: is it possible to talk of an individual's objective risk?[7] It seems that one can have an objective measure of general risk. From the fictitious example given above, this might be a 5% chance of being a victim of that particular crime. This can alternatively be expressed as 1 chance in 20 of it happening in the next 12 months, or as occurring once every 20 subsequent years.[8] But this does not mean that one can have an objective measure of individual risk. In other words, an individual's average general risk (the 5%) is not that individual's actual personal risk.

An example might clarify this. One of us lives in Scotland, where 5% of households are burgled each year. This is his average general risk. However, he lives in neither a rich nor a poor area; in a tenemental apartment which is neither on the ground nor top floor; alone but works at home all day; protected both by unclimbable plastic external downpipes and by a 5cm thick solid core front door made of Brazilian ramin fastened on the hinge side by five 15cm solid brass hinges interspersed with hinge bolts, and

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[6] This assumes that the 5% who do become victimised were all in the cohort that thought this would happen. This isn't true for the one test we are aware of (Ditton & Chadee, 2006).

[7] Those who talk of "objective risk" presumably define risk as simply the mathematical probability of an event occurring within a specified future time period. However, most risk theorists (Kahneman, Tversky, Slovic, and so on – this point is developed and fully referenced in Ditton & Chadee, 2006 – define risk as the probability of an event occurring coupled in some way to the perceived magnitude of the impact it would have should it occur.

[8] For lay persons, it seems that being victimised exhausts victimisation likelihood until the next cycle begins, i.e., that victimisation reduces the immediate chance of victimisation. Those familiar with patterns of repeat victimisation believe the reverse to be the case.

on the lock side by a 4-turn 5-lever lock that simultaneously throws 4 tungsten carbide bolts 8cm into a solid steel haft, and a rod with a floating core into the ceiling and another similar one into the floor. Each factor has probably reduced his actual risk of being burgled downwards from the average risk, although this change is incalculable.

Subjective risk seems to be a valid concept, and henceforth here the use of the word risk implies this qualification. To make plain our viewpoint, much the same could be said of the fear of crime, viz: because there is no objective fear, then what is meant is subjective fear, and references to fear in the text that follows imply subjective fear.[9]

Investigating Risk

Thus, it follows that enquiry regarding the terminology and conceptualisation of risk demands additional attention. The necessity for debates such as those regarding actual ('objective') and appraised ('subjective') risk have developed, in part from the exponential growth of research and investigation. On an abstract level, contemporary discourse now talks of rapid social change and uncertainty (Beck, 1992) and the decline of trust and confidence in expertise (Giddens, 1990). Risk in the current era describes a shift from the confidence of modernity to a condition of perpetual doubt (Douglas & Wildavsky, 1982). Thus as a society we now speak specifically of the omnipotence of risk (Furedi, 1998), primarily in relation to negative consequences and feelings of insecurity.

Over the past thirty years, there have been many different avenues that risk research has followed and many different fields to which the term has been applied. Unhappily, the past trajectory of the term has been stunted by associated or amalgamated terms. Over time terms such as danger, harm, hazard, loss and catastrophe have all been used to highlight the negativity of risk. Probability, chance, possibility, potential, and likelihood have been used to describe the cost benefit equation of prediction. Worry, fear, anxiety, uncertainty and insecurity have all been used to describe the emotional reaction to such a situation. Although diversity can be useful as an exploratory methodological tool, the necessity for clear and coherent definitions of risk and/or its associations given the growth of literature is apparent.

Primarily investigation has been separated by the use of risk to describe those conditions we are susceptible to and those which are actively sought. Researchers divide into those who have devoted time to the actual and appraised nature of voluntary risks, and those who aim to investigate involuntariness. Thus to take risks and to live 'at risk' are attitudes which now polarise the discipline. The dialogue surrounding involuntary risks, those specifically described in this paper, has traditionally received greater attention following the goal of risk avoidance and the modern institutional responsibility for safety. The risk discipline began and grew

[9] Ferraro (1995: 25) talks of "imagined" fear. This is not altogether inappropriate, as respondents are rarely actually experiencing fear when they tell surveyors that they are, to some degree or other, "fearful" (Garofalo, 1981: 841). We feel that "subjective" fear is preferable, as the connotation of "imagined" is imaginery, and we prefer the socio-psychological idea that the subjective is real. Additionally, the very idea of talking of "objective fear" demonstrates how silly it is to talk of "objective risk". We don't believe that there is fear "out there" which is perceived by people. The same is true for risk.

through the 1980s with a focus on technological risk, and its perception by the lay public, by policy makers and those providing risk sensitive information. The variables used to test risk perception have remained stable but have expanded, and include: the intensity of dread, the predicted number of people exposed, the level of understanding, the unknown character, familiarity, the degree of controllability, voluntariness, the possible catastrophic potential and the distribution of possible risks and benefits (Slovic, *et al.,*1982; Kasperson, *et al*., 1988; Bouyer, *et al*., 2001). These have come to be seen as more valuable tools in lay risk perception than any use of statistical predictions of likelihood of death or expected fatalities (Slovic, *et al*., 1982). Further, dread –'the perceived catastrophic potential of the hazard and the perceived lack of control over a situation' - has repeatedly been shown to be the strongest influence in risk evaluations, even more so than the actual lethality level of the given hazard (Bouyer, *et al.,* 2001: 457).

The limitations of early investigation stemmed from ignorance of sociological explanations. Discourse in this area increased with interest in the cultural bias of risk acceptability (Douglas, 1982), and the social amplification of risk (Kasperson, *et al.,* 1988) accounting for how and why individuals chose which risks to worry about. Such directions illuminated the battle within the risk discipline for the superiority of psychological, social, and structural accounts. Although beneficial in so far as they highlighted the complexities and limits of the cost/benefit assumption or low consequence/high probability, high consequence/low probability model (Kasperson, *et al.*, 1988) many sociological directions fell short in their assumption that risk decisions, although socially diverse, were based on the rationality of the actor. Thus behavioural sciences began to tackle the question of risk, not by denying rationality but by describing choice via limitations and heuristics (Short, 1984). Growing from the initial experiments of Tversky, Kahneman and colleagues in the early 1970s, heuristics explained why subjects made seemingly 'bad' decisions. The frames for such heuristics, suggests Heimer (1988), is the governance and variance of risk acceptability. Short (1984: 719) uses the example of crime to make such a point.

"Criminology and risk analysis are linked conceptually by the fact that both are concerned with classes of hazard, a very broad topic which has been divided in a variety of ways, but with little theoretical coherence. Study of the similarities and differences among various classes of hazard is important if 'the selection of dangers' and the acceptability are to be understood (Douglas & Wildavsky, 1982). Processes involved in the 'selection of dangers' and similarities as well as differences among hazards, suggests that the search for commonalities in the nature of hazards, as well as in the perception, selection, and actions taken to avoid, control or repair damages resulting from hazards might be fruitful … the heuristics discovered by cognitive psychologists – common-sense principles of reasoning, e.g. 'rules of thumb' that people use when confronted with choices and the need to make decisions – are based on social rationality … Research on the fear of crime, for example, suggests that people respond to the 'social facts' of crime in ways which reflect their personal experience and values."

Research surrounding the biases of decision making has grown since the original work of Kahneman, Tversky & Slovic (1982), supplemented more recently by a new edited publication to update their original work. From this rapidly expanding

literature, concepts specific to individual psychology can be analysed:[10] experience, optimism, knowledge, and the newer concept emotion. Specific biases related to these concepts have been shown to influence estimations of risk and lead to unrealistic accounts of likelihood and outcome.

The cognitive dimension of decision making is complex and often relies on the process of attribute substitution. Weighting biases in cognitive reasoning occur when the target and the heuristic attributes differ and the latter is given too much or too little weight (Kahneman & Fredrick, 2002: 53). Thus in relation to experience such a process has been labelled the availability heuristic. In short, people predict on the basis of information available to them.

For example, when faced with the question: 'Are more deaths caused by rattlesnakes or bees? a respondent who read recently about someone who died from a snakebite or bee sting may use the relative availability of instances of the two categories as a heuristic' (Anderson, 1991 in *ibid.* : 55). Thus a recent documentary about the lethality of bee stings may lead to an overestimation of likelihood. Therefore to ask - 'how likely am I to be murdered in the next 12 months?' may provoke the alternative conception - 'how many instances of murder come easily to my mind?' Recent experiments devised to test such processing have shown some success. Research in relation to the estimated frequency of winning a contest, being arrested, subscribing to cable television and contracting a medical illness has supported the following hypothesis: when a hypothetical outcome is explained or imagined it becomes subjectively more likely to occur (Sherman *et al.,* 2002: 98). Thus in the case of illness, subjects who actively constructed easy to imagine images (e.g., read about symptoms with ease) judged themselves to be more likely to contract the disease than those who could not so imagine. Further, if images became difficult to imagine (because abstract rather than concrete symptoms were presented) perceived likelihood decreased. In addition, further research has suggested that vivid events are also overestimated in terms of likelihood (*ibid.*: 102).

The creation and supply of such images has been critically addressed. Drawing on the social environment as the frame for such heuristics, Heimer (1988: 499) argues that 'what institutions do is to provide us with a series of vivid experiences that then, through the availability heuristic, make us more likely to overestimate some risks and to underestimate others thus 'social situations have some influence on how people perceive superficially identical risks'. Further Heimer (1988: 494) makes the link between seemingly irrational risk perception and crime victimisation.

"For example, Thaler (1983: 62) points out that death by homicide is rarer than death by suicide (even though suicides are underreported, since they are often classified as accidents). But homicide receives more publicity than suicides and so are remembered more easily. Further, one could argue that death by homicide violates a stronger cultural norm than death by suicide and that it is therefore a more threatening and significant event. For these reasons, instances of homicide are more 'available' than instances of suicide, and people overestimate the likelihood that someone will be murdered, relative to the likelihood that he or she will commit suicide."

[10] The influence of the social environment and the structural conditions of society are also of worth and could be added to this discussion.

In addition to mediated or abstract experiences, lived experience can de-bias or re-bias estimations of likelihood of voluntary and involuntary risks (it has *never* happened to me therefore it must *not* be frequent). Such a statement is linked to the concept of optimism described here. Furthermore critical incidents (personal or of a close relative or friend) (it *has* happened to me/them twice therefore it must be *very* frequent) can lead to a sense of vividness and dread of suggested events and thus lead to overestimation regardless of the context specific variables determining the individual's behaviour (Denscombe, 2001 taken from the work of Kahneman, *et al.,* 1982). In contrast Barnett & Breakwell (2001: 172) note that 'other evidence suggests that people with a greater experience of constant and extreme risks may be less concerned'. They give the example of residents living near nuclear power facilities and cite habituation as one explanation. Further they found (*ibid.*: 176), via psychometric testing, that experience was one of the greatest predictors of concern for involuntary risks, linking such conclusions to aspects of control. Thus we may find that not only can crime related images, previous personal or close personal victimisation or non-victimisation affect fear of crime, but such attributes also have a biasing impact on risk perception.

The optimistic notion of 'it won't happen to me' is well documented in the literature on adolescence, and is often used to justify or neutralise voluntary risk taking activity. Within wider society the institutional anxiety surrounding safety especially in relation to involuntary risks cements this concern (Furedi, 1998). However, in order to deal with uncertainty and the inability to avoid or even know all the risks, such a neutralisation may be of some use. Whereas the concepts of dread and vividness which develop from experience may heighten our sense of vulnerability, optimistic bias may also effect perceived susceptibility – ones belief in the likelihood of personal harm (Weinstein & Klein, 2002: 313). Often, as is found with many health related behaviours, one makes comparisons with the perceived risk of a neighbour, resulting in an underestimation of personal risk (negative outcomes are more likely to happen to *them*, positive outcomes are more likely to happen to *me* - Armor & Taylor, 2002). In turn, individuals tend to negate past experiences, their own and of others, if they contradict with their optimistic predictions (Buehler, *et al*.2002: 255). Although there are obvious consequences of such unrealistic optimism, not least that of disappointment, there has been little empirical evidence which proves that optimism is detrimental (Armor & Taylor, 2002: 337).

The ability to assign higher probabilities to attractive outcomes than 'either objective criteria or logical analysis warrants' (Armor & Taylor, 2002: 334) may act as a coping mechanism for life in contemporary society. However the respondents in this research showed something quite different. Is it well documented that people overestimate unlikely events, such as those threatening mortality, to the extent for which the concept of pessimism could be applied. Caution is warranted, as 'one might hesitate to label the overestimation of negative but statistically infrequent outcomes as evidence of genuine, psychologically meaningful pessimism, however, as these estimates may simply reflect difficulties interpreting and reporting extreme probabilities' (Armor & Taylor 2002: 336). Further, people in other studies who appeared to report this type of pessimism, were shown to be optimistic when assessed on their *relative* likelihood rather than compared to population base rates (Rothman, 1996: in *ibid*.).

The third contribution to the behavioural concept of risk is that of knowledge. In many cases where private knowledge is not obtainable lay knowledge is reliant on expert predictions and a sense of trust. There are two overriding concerns with such a notion. Firstly, we acknowledge that experts themselves are not capable of making predictions without succumbing to the biases of human judgement and often show signs of overconfidence (Slovic, *et al*., 1982). Secondly, the way in which the layperson uses and understands the knowledge presented to them is again subject to such biases. Both concerns have been investigated by Kahneman & Tversky under the remit of the representativeness heuristic. Their 1971 experiments showed that statisticians 'placed too much confidence in the results of small samples' and suggested that the same occurs in everyday life (Kahneman & Fredrick, 2002: 49). The use of resemblance is therefore used to determine the 'assessment of the degree of correspondence between a sample and a population, an instance and a category, an act and an actor or, more generally, between an outcome and a model.' (Tversky & Kahneman, 2002: 22). Considering the aforementioned example 'Are more deaths caused by rattlesnakes or bees?' they find 'if no instances come to mind, the respondent might consult impressions of the 'dangerousness' of the *typical* snake or bee' (Anderson, 1991 in Kahneman & Fredrick, 2002: 55). Additionally it is suggested that the creation of such stereotyping is in part a product institutional power (Heimer, 1988: 499).

In recent years the knowledge debate has been furthered by sociologists of risk to account for the mistrust of experts and expert systems. Thus in many situations the predictions of experts, for example number of fatalities or probability assessments, are not consulted. Furthermore, in most instances individuals believe their predictions are sound and that they have a clear knowledge of any possible risks. It is, of course, impossible to achieve absolute knowledge. However in a society determined by risk *acceptability*, to admit we do not know is *unacceptable* (Douglas & Wildavsky, 1982: 49).

"If we knew the risks we face, we might compare and order them accordingly to degrees of danger. But can we know the risks we face, now or in the future? No, we cannot; but yes, we must act as if we do."

Thus in experimental situations, cognitive researchers have identified the bias of overconfidence, where individuals appear 'more confident in judgements than is warranted by the facts' (Gilovich & Tversky, 2002: 230) and even expert assessments claim they are 'often wrong but rarely in doubt' (*ibid*.). In many situations such confidence is extremely difficult to eliminate and often controls further action (*ibid*.: 248). Such conditions link the concept of optimism to the knowledge debate. Like optimism, overconfidence makes people feel good, although the cited authors doubt that such benefits outweigh the possible costs (*ibid*.: 249).

The final contribution found in the literature surrounding attribute substitution is that of emotion, the conscious or unconscious feeling which produces a positive or negative stimulus (Slovic, *et al.,* 2002: 398).

"Although analysis is certainly important in some decision making circumstances, reliance on affect and emotion is a quicker, easier and more efficient way to navigate in a complex, uncertain and sometimes dangerous world."

Events are evaluated and weighted accordingly. Then, via a process of 'affective mapping' (*ibid.*: 405), positive emotion leads individuals to attempt to copy the recalled event based on a judgement of low risk, high benefit. In turn negative emotion suggests the event should be avoided based on a contrasting judgement of high risk, low benefit. Such an emotive response can also be related to risk estimations, which as noted, are highly dependent on the concept of dread. Slovic and colleagues note that many of the results attributed to the availability heuristic may have a great deal to do with affect, thus affect laden images, rather than presented statistics, induce greater perceptions of risk where highly publicised images, for example accidents, fires, tornados cancer, homicide (found in their earlier research), may again have the most impact (*ibid*.: 414). Such conclusions stemmed from the work of Johnson & Tversky (1983, in Lerner & Keltner, 2000: 480) which involved the distribution of newspaper articles (chosen to provoke either positive or negative responses) to a selected sample who were subsequently asked to estimate annual fatalities of various activities. They found that those who absorbed stories provoking negative emotions gave more pessimistic estimates of likelihood – i.e. higher frequency of death. More recent work on risk judgements has found that anger and fear have opposite effects on risk perception. Even though both high in negative valence – fearful people (assessing the factors of uncertainty and lack of control) predicted higher risk whereas angry people gave significantly lower estimates (*ibid*.). No cause was identified. Using a criminological example Lerner *et al.* (2003) provided a link between emotion and responses to terrorism. They again found that anger triggered optimistic beliefs, whereas fear instigated greater pessimism.

The 'risk as feelings hypothesis' (Loewenstein, *et al*., 2001 in Kobbeltved, e*t al*., 2005) is therefore of interest in its assumption that risky responses come from direct emotional influences including feelings of worry, fear, dread, or anxiety. Feelings of dread have been found to be the main determinant in the perception of risk, and indicates a reliance on feelings to make risk decisions. Alternatively reviews of the current literature show that worry is only moderately related to perceived risk, where such a concept relates more to feeling unsafe than perceived risk (*ibid.*: 433). In their research, Kobbeltved e*t al*. found that even with high levels of worry and/or emotional distress (military) respondents did not report pessimistic risk judgements. They concluded that policy makers therefore should not test worry as evidence for irrational risk and danger judgements, rather the publics' perception of risk (which does not change as a function of worry) is a more realistic indicator.

Given the evidence which suggests that risk estimations are subjected to heuristic biases, should one attempt to alter or de-bias such judgements? The consequences of such must first be noted. Risk perception studies have not only been concerned with initial perception but the behavioural responses to such an assessment. Kasperson, *et al*. (1988) note that secondary consequences of the perception of risk events, i.e. the behaviour one exhibits, may lead to an increase or decrease in the physical risk itself.[11] The behaviour that people exhibit when faced with the potential of risk is

[11] Using predominantly technological examples

based on their judgements and heuristic biases. Thus, and to give a broad example, if one has high levels of perceived risk, the consequence may be increased safety conscious behaviour or risk aversion.

Changing perception (risk self-rating) may have both positive and negative consequences. Furedi (1998: 25) notes that fear has been perceived by many public health officials as a 'small price to pay' for providing risk information to the population as a whole (e.g. risks of skin cancer) designed to increase risk sensitivity. Such a price (the unethical creation of worry across the board rather than targeting specific cross sections) does not allow individuals to make informed decisions about risk, but plays on emotional states. Reference to the biased perception of the risk of crime to the elderly and situations of 'house arrest' (Ditton & Chadee 2003: 418) cement this point. In this instance the attempts to de-bias the concept of risk becomes intertwined with the concept of fear or subsequent emotional response.

The downside of reducing the perception of risk may lead to behaviour which increases the likelihood of an adverse consequence occurring. Such a concept is described by Adams (1995) as 'risk compensation'. He gives the example of seat belt legislation and increased media campaigns, which although promoting safe driving, allows the driver to take more risks whilst under the 'illusion of control' (Lyng, 1990). Thus if the risk self-rating of criminal victimisation was lowered, the compensatory behaviour may place individuals in heightened situations of risk. In contrast Furedi also notes (1998: 24) that increasing sensitivity to risk events, namely road rage in the 1980s, can increase the likelihood of fatalities, due in his example to drivers subsequently carrying hand guns.

The methodologies used by risk researchers have themselves been open to criticism. Wahlberg (2001) notes that to rely on questionnaires to assess risk perception negates the essence of thought and feeling associated with risk. Sjoberg notes that the act of filling in the questionnaire bears little resemblance to, and may momentarily increase, anxiety found in the outside world (1998, in Wilkinson 2001). Wahlberg continues that behaviour is therefore not investigated and no real appreciation of 'why' is deduced (2001: 241). This is further fuelled by predetermined risks provided to the subjects and selected solely by the researchers rather than allowing self-definition (Wilkinson 2001: 9). Finally the way risk is measured may play a large part in the final conclusions surrounding risk appraisal (*ibid*.). Kobbeltved, *et al*., (2005: 428) suggests that risk research much consider whether general/average risk or personal risk is being assessed, and whether studies have taken into consideration risk exposure. The specific way in which prediction is measured has also been shown to bias output. The compatibility hypothesis shows that the use of diverse methods of prediction, for example grades or ranking to predict academic performance, permits more weight to be given if measurement is on the same scale (Slovic, *et al*., 2002: 220), should also be considered. Finally, evidence has shown that there may be differences in the cultural use of response scales (Yates, *et al*., 2002: 274).

Although methodological limitations are evident with most fields of research, the complex nature of defining, conceptualising and applying risk to selected subjects has yet to be thoroughly investigated. The examination of fear, as an association of risk, supported by the recent direction of the affective model of risk perception may also

benefit from further analysis. How has risk and fear been dealt with in what might be termed the 'fear of crime' literature?

Re-visiting Fear and Risk

There has been one sophisticated attempt (the work of Warr) and one semi-sophisticated one (the work of Bankston and colleagues) to relate risk to fear – and a very large number of comparatively unsophisticated ones. Table 1 summarises these latter studies, with the right-hand column indicating the size (where given), but not the significance (cited too rarely to warrant citation here) of the correlation between the two. These studies are listed in alphabetical order, and the table is highly derivative of one constructed by Ferraro (1995: 28-9). We have updated it, but deleted any reference to studies cited by him, but which relied only on "objective" risk and fear, and those which have not stated explicitly a fear/risk correlation coefficient.

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Table 1 here

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It can be seen from Table 1 that the correlation range is wide (from 0.09 to 0.76) but the comparison is hardly fair as the operationalised definitions of risk and fear are almost all idiosyncratic, there is an enormous range of sample sizes, an assortment of sample selection mechanisms, a variety of respondent interview methods, a 32 year range in publication, an extensive geographic range of research location, a variety of sample entry eligibility criteria, a series of differing correlation techniques, and questioning on a broad range of offences. This is emblematic of any attempt to meta-analyse sub fields within the general area of the fear of crime. Initially, a number of studies appear to offer data and analysis that can be pooled. On inspection, no two have sufficient in common to allow this to take place.

There is a further sub-set of studies (Bankston, *et al*., 1987; Boggs, 1971; Box, *et al*., 1988; Jaycox, 1978; Lee, 1982; Lewis & Maxfield, 1980; McPherson, 1978; Roundtree & Land, 1996; Smith & Torstensson, 1987) that have investigated empirically risk and fear, but that have not reported the quantitative relationship. A few studies suggest, from their titles that they are about some quantifiable version of risk, but turn out not to be (Chan & Rigakos, 2002; Gustafson, 1998; Walklate, 1997).

For yet other studies, definitions are unconventional. Chiricos, *et al.*, (1997) mislabels safety variables as risk ones, Rucker (1990) fear variables as risk ones, and Wiltz (1982) risk variables as fear ones. For Furstenberg (1971) risk equals fear, and for Brantingham, *et al*., (1986) risk is combined with fear, and the result confusingly called "fear".

Method

Sample

Data are from all three waves of the Community Living and Integration Survey, conducted by the ANSA McAL Psychological Research Centre, Faculty of Social

Sciences, University of the West Indies, St. Augustine, Trinidad, which piloted in early 1999 (see Chadee & Ditton, 1999). The first full wave was conducted in September 1999 (n=728), the second in September 2000 (n=636), and the third in September 2001 (n=716). The sampling frame was a multi-stage cluster design. Within each household, the self-declared head of the household (or the next responsible adult aged at least 18 years) was chosen as the respondent.

The initial achieved sample was representative of the Trinidadian population, specifically for age, geographical location and occupation. Some 159 respondents were only in wave 1, 117 only in wave 2, and 234 only in wave 3. Some 139 were in waves 1 and 2, 102 were in waves 1 and 3, and 50 in waves 2 and 3. Finally, 330 respondents were in all three waves. Sample demographics are in Table 2. It can be seen that the structure of the three samples is broadly similar.

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Table 2 here

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Measures

The questions used to measure fear of becoming a victim of particular crimes were the now standard specifics (adopted from Ferraro and LaGrange, 1992). Each was asked: "How much would you say you fear...

29. Being approached on the street by a beggar?
30. Being cheated, conned, or swindled out of some money?
31. Have someone attempt to break into your home while you are away?
32. Have someone break into your home while you are there?
33. Being raped or sexually assaulted?
34. Being murdered?
35. Being attacked by someone with a weapon?
36. Have your car stolen?
37. Being robbed or mugged on the street?
38. Property damaged by vandals?
39. Being kidnapped?
40. Being a victim of crime in your workplace?
41. Being a victim of crime when you are out liming?[12]
42. Being a victim of crime in the near future?

Respondents were offered the following response options: "very afraid", "afraid", "unafraid" or "very unafraid".

The questions used to measure likelihood of becoming a victim of particular crimes were effectively identical. Each was asked: "How likely do you think it is that the following will happen to you in the next year…

[12] "Liming" is a Trinidadian word. It means youths hanging about on street corners at dusk.

66. Being approached on the street by a beggar?
67. Being cheated, conned, or swindled out of some money?
68. Have someone attempt to break into your home while you are away?
69. Have someone break into your home while you are there?
70. Being raped or sexually assaulted?
71. Being murdered?
72. Being attacked by someone with a weapon?
73. Have your car stolen?
74. Being robbed or mugged on the street?
75. Property damaged by vandals?
76. Being kidnapped?
77. Being a victim of crime in your workplace?
78. Being a victim of crime when you are out liming?
79. Being a victim of crime in the near future?"

Respondents were offered the following response options: "very likely", "likely", "unlikely" or "very unlikely".

Results

(i) Simple risk/fear correlations

Table 3 contains the result of correlating fear for each offence with risk for its pair. Correlations for some offence pairs (car theft, kidnap, work crime, liming, and future crime) are not included as these play no part in the indices used later in this article.

_____

Table 3 here

_____

Of the 27 possible correlations, all but the 3 for begging are statistically significant positive correlations. Non-correlatively, apart from the 3 begging relationships (and those for being conned and being burgled when not there in wave 3, and the difference here is small), tend to be more afraid of each offence than think it likely. Begging is clearly different, and may indicate either or both of: the more frequently a negative event is experienced, the less fearful of it people become, and/or less serious offences simply happen more often.

Again except for begging, the correlation coefficients typically exhibit greater variance offence to offence within the same wave than they do for the same offence across waves. The maximum average difference between minimum and maximum coefficient size across offences for all three waves is .162, whereas the maximum average difference between minimum and maximum coefficient size across waves for all eight offences is .084. This offers limited support for the notion that risk perceptions are more stable over time than across wave.

On the other hand, the coefficients are not large, and range from .208 to .459, suggesting common variance of only between 4% and 21%. Put another way, this may be taken as some evidence that the two variables are substantially independent.

(i) Complex risk sensitivity

In two articles, Mark Warr developed the idea of "risk sensitivity". In his 1984 article (which focuses on people), his basic argument is that identical levels of risk do not produce identical levels of fear. The implication is that single correlation will distort the real relationship, which will be revealed by linear correlation. For example, for women and men, the thresholds and slopes of fear of burglary may well be different. In his example (Graph A in Figure 1 of Warr, 1984) fear is at 0 when risk is lower for women than for men (a lower threshold). As perceived risk increases for each group, fear increases faster for women than for men. He later claims (p. 695) that "the more serious the offense is perceived to be, the faster fear will increase with perceived risk (i.e., the greater the slope of fear on risk) and/or the greater the fear at all levels of perceived risk (i.e., the greater the intercept)". In his 1987 article (which focuses on crimes), he defines threshold as: "the point at which increasing risk begins to trigger fear" and slope as "the rate at which fear increases with perceived risk" (p. 39).

Warr's model cannot be followed exactly as he examines both risk and fear (for each offence) with 11 point (0-10) scales. Linear regression, with assumed linearity, presupposes interval data, but 0-10 scales for concepts like fear and risk are "mock" intervals which suggest a degree of precision that probably is not there

Bankston *et al*. (1987) developed a simpler model, with both risk and fear coded on a simple 3 point scale ("not", "somewhat" and "very" in both cases). They (their Table 3, p. 105) regressed fear on risk, reported the slope (eg, top left hand in their Table 3) as .46, and then gave the values for each of 3 risk values. This is unnecessary as the first value (.86 for risk = 0 in his case) is merely the intercept, with the other two values (1.32 and 1.78) increasing by the slope of .46 in a linear fashion. Giving the intercept and the slope would have been sufficient.

It is possible to combine the virtues (and eliminate the vices) of each approach, by recreating the property and personal fear and risk indices (and combined indices) as illustrated in Chadee & Ditton (2003). The FearPersonalCrimeIndex is an additive combination of fear of: having somebody break into a home when R is there; of being raped or sexually assaulted; of being murdered; and of being attacked by someone with a weapon. The FearPropertyCrimeIndex is an additive function of fear of: being cheated conned or swindled out of some money; of having someone break into a home when R is away; of being robbed or mugged on the street; and of having property damaged by vandals. The FearAllCrimeIndex was created additively from being fearful of: being approached on the street by a beggar; being cheated conned or swindled out of some money; having someone break into a home when R is away; having somebody break into a home when R is there; being raped or sexually assaulted; being murdered; being attacked by someone with a weapon; being robbed or mugged on the street; and of having property damaged by vandals. These combinations may seem to arbitrarily partition crimes into personal and property when some contain elements of both. However, the combinations were originally suggested by factor analysing data from waves 1 and 2. The risk indices were created identically from matching risk variables, and were not separately factor analysed.

They can then be regressed on each other, and the slopes and intercepts reported, as in Table 4. Creation of indices such as this combines the merit of Bankston, *et al*.'s short ordinal response scales, with Warr's interval variables. The partial indices are 0-12 scales, and the total indices are 0-27 point scales. The resulting regressions are in Table 4.

Table 4 here

Surprising little can be made of this. First, there is some – but not much – evidence that risk sensitivity distinguishes males from females. In all three waves, when the genders are compared, the intercepts are always higher for females (i.e., when females rate risk as 0, they exhibit more fear than do males under the same risk condition). However, the slopes are always steeper for males. This may well be because of a possible "ceiling" effect for females, i.e., with a high intercept, it is harder to have a steep slope (Chiricos, *et al*., 1997a). Nevertheless, in wave 1, except for two comparisons (rows 22 & 23, and 24 & 25) the maximum levels of fear are higher for females than they are for males. This is the case in wave 2 except for four of nine comparisons (8 & 9, 18 & 19, 22 & 23, and 26 & 27), and in wave 3 except for one comparison (6 & 7). Because of the slope effect, the differences between levels of maximum fear for each comparison are less than the differences between the intercepts.

Second, as for age, the three key comparisons (rows 10 & 11, rows 12 & 13, and rows 14 & 15) indicate that the young have higher intercepts (except for rows 12 & 13 in wave 2), but there is little difference between the slopes or between the levels of maximum fear. However, on balance, the young seem slightly more risk-sensitive than the old.

Discussion

Relating risk and fear, whether simply or in a more complex fashion, has not been as productive as had been imagined. The attempt has, however, shown that they are separate concerns, and that risk is not acting as a proxy for fear.

One basic difficulty relates to a confusion of terms here, and a lack of subsequent agreement about the nature of the relationship between them. "Risk" is the greatest culprit: the simplest way is merely to conceptualise it as the probability of an event occurring in a specified time period, but risk is rather more frequently conceptualised as a more complicated yet less precisely specified combination of the probability of an event occurring coupled to the magnitude of the impact it might have should it occur (Adams, 1995: 69; Slovic, 2000: 195, 232). For yet others it means something as remote as "manufactured uncertainty" (Beck, 1992). The ways in which individuals appraise the likelihood of personal risk, we believe is a product of heuristic biases. Although such processes are not mutually exclusive nor is it possible to say with certainty which bias is operating in which given situation. For these subjects their overestimations of likelihood may have developed from availability, representativeness, overconfidence, or emotive heuristics, however it is questionable as to whether attempts should be made to address them, not least with regard to

changes in consequential behaviour. Furthermore, re-alignment ultimately becomes redundant if the nature of actual or objective risk (as opposed to average risk) is spurious.

As a concept, fear of crime is no easier to pin down than is risk. Fear has been used in many different ways (from being a general concern with crime in society to a specific worry about becoming a victim) and regularly but carelessly used interchangeably with concepts such as anxiety, with which it is erroneously believed to be synonymous.[13] It has accordingly lost any specific agreed meaning, and future research might most sensibly be oriented to theoretical development.

The data presented here does not suggest that changes in perceived personal risk will have considerable effects on personal levels of fear, nor can substantial predictions be made regarding demographic differences in risk sensitivity. The exact nature of the risk/fear relationship therefore remains elusive as is the extent to which the investigation of fear can add to the risk debate. The suggested independence of the two variables should act as a signal for the separation of further analysis to provide clear and coherent dimensions before such comparisons and correlations are attempted in the future.

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[13] It is intriguing to speculate where we might be now if fear of crime had originally been investigated by experts on fear rather than by experts on crime.

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Table 1: Studies comparing subjective risk and subjective fear

Study; date	Subjective Risk	Subjective Fear	r^2
Bankston & Thompson, 1989	Risk index	Fear index	0.43
Chadee, 2003	10 item scale	10 item scale	0.43
Chadee & Ditton, 2003	28 point index	28 point index	0.36
Ferraro & LaGrange, 1992	10-item index; 2 latent variables	10-item index; 2 latent variables	0.56
Ferraro, 1995	10 item scale	10 item scale	0.65
Giles-Sim, 1984	5-item index; pers./prop.	4-item index; 2 latent variables	0.42
LaGrange & Ferraro, 1989	2 items; pers./prop	11-item index; 2 latent variables	0.20
LaGrange *et al*., 1992	10-item index; 2 latent variables	10-item index; 2 latent variables	0.71
Mesch, 2000	3-item index	2 items	0.18
Miethe & Lee, 1984	2 pers. Items 2 prop. items	2 pers. Items 2 prop. items	0.45 0.31
Ortega & Myles, 1987	Neighborhood risk	GSS	0.20
Parker, *et al*.; 1993	4-item index	Single item score	0.47
Riger *et al*., 1978	Rape risk	NCS	0.68
Schwarzenegger, 1991	Victim prognosis	GSS, "daytime" GSS	0.09
Sparks & Ogles, 1990	Risk of violence	Fear of violence	0.24
Taylor *et al*, 1986	1 risk measure	4 worry measures	0.68
Thomas & Hyman, 1977	4-item index	9-item index, mixes fear and risk	0.70
Thompson et al, 1991	3 item risk rape scale	3 item fear rape scale	0.35
Tulloch, 2000	4 point risk scale	4 point fear scale	0.57
Warr & Stafford, 1983	16 items	16 items	0.76

Updated from Table 3.2 in Ferraro, 1995: 29-30.

Table 2: Sample Demographics

	Wave 1	**Wave 2**	**Wave 3**	***All waves***
% male	42	41	43	*43*
% Afro-Trinidadian	36	32	35	*36*
% Indo-Trinidadian	45	50	48	*45*
% Mixed race	19	17	17	*18*
% White	1	-	1	*1*
Age range	18-94	16-94	15-86	*15-94*
Age mean	45	44	44	*43*

Table 3: Fear/Risk correlations

r **sig** **N**	**%** **%**	Wave**1** Correl--ations	Wave **1** %Afraid %Likely	Wave**2** Correl--ations	Wave **2** %Afraid %Likely	Wave**3** Correl--ations	Wave **3** %Afraid %Likely
29Fbeb		-.056	29	-.004	35	.026	27
by		.138		.917		.493	
66Rbeg		695	78	604	77	681	79
30Fcon		.426	45	.267	52	.379	41
by		.000		.000		.000	
67Rcon		687	39	612	47	687	44
31FburgAway		.286	68	.208	69	.320	58
by		.000		.000		.000	
68RburgAway		692	60	605	64	685	60
32FburgThere		.290	67	.306	68	.272	55
by		.000		.000		.000	
69RburgThere		690	43	610	45	694	39
33Frape		.412	63	.378	65	.391	53
by		.000		.000		.000	
70Rrape		643	41	585	37	675	34
34Fmurder		.289	68	.210	72	.249	61
by		.000		.000		.000	
71Rmurder		651	43	557	45	653	42
35Fattack		.290	76	.247	73	.308	65
by		.000		.000		.000	
72Rattack		664	57	600	52	688	53
37Frob		.332	70	.277	75	.310	64
by		.000		.000		.000	
74Rrob		688	59	609	62	685	63
38Fvandal		.459	56	.328	56	.392	45
by		.000		.000		.000	
75Rvandal		684	38	602	43	690	42

Table 4: Fear/Risk linear regressions

	Wave 1 (n=730)			Wave 2 (n=636)			Wave 3 (n=716)		
	Inter -cept [n]	**Slope (r^2)**	**Max Fear**	**Inter -cept [n]**	**Slope (r^2)**	**Max Fear**	**Inter -cept [n]**	**Slope (r^2)**	**Max Fear**
1. All	9.16 [730]	.51 (.18)	22.93	11.32 [636]	.40 (.10)	22.12	7.94 [716]	.49 (.17)	21.17
2. Pe	5.10 [730]	.48 (.15)	10.86	5.72 [636]	.43 (.09)	10.88	4.79 [716]	.42 (.11)	9.83
3 Pr	4.06 [730]	.50 (.20)	10.06	5.12 [636]	.35 (.09)	9.32	3.70 [716]	.44 (.17)	8.98
4 All m	6.74 [310]	.58 (.27)	22.40	8.10 [263]	.49 (.15)	21.33	5.79 [304]	.50 (.27)	19.29
5 All f	11.86 [420]	.39 (.11)	22.39	15.04 [373]	.24 (.04)	21.52	10.82 [412]	.39 (.11)	21.35
6 Pe m	3.87 [310]	.56 (.21)	10.59	4.23 [263]	.50 (.13)	10.23	3.57 [304]	.43 (.16)	8.73
7 Pe f	6.59 [420]	.34 (.08)	10.67	7.50 [373]	.28 (.05)	10.86	6.32 [412]	.31 (.06)	10.04
8 Pr m	3.40 [310]	.54 (.25)	9.88	3.75 [263]	.46 (.15)	9.27	2.91 [304]	.47 (.25)	8.55
9 Pr f	4.75 [420]	.44 (.15)	10.03	6.44 [373]	.22 (.04)	9.08	4.56 [412]	.38 (.12)	9.12
10 All y	9.74 [348]	.49 (.17)	22.97	12.52 [300]	.38 (.10)	22.78	8.67 [336]	.45 (.16)	20.82
11 All o	8.82 [379]	.51 (.18)	22.59	10.36 [330]	.41 (.10)	21.43	7.00 [377]	.54 (.20)	21.58

All = 0-27 point scales
Pe, Pr = 0-12 point scales
Pe = personal
Pr = property
y = young
o = old
m = male
f = female

Table 4: Fear/Risk linear regressions (contd)

	Wave 1 (n=730)			Wave 2 (n=636)			Wave 3 (n=716)		
	Inter -cept [n]	**Slope (r^2)**	**Max Fear**	**Inter -cept [n]**	**Slope (r^2)**	**Max Fear**	**Inter -cept [n]**	**Slope (r^2)**	**Max Fear**
12 Pe y	5.27 [348]	.48 (.14)	11.03	5.72 [300]	.52 (.13)	11.96	5.33 [336]	.37 (.09)	10.01
13 Pe o	5.00 [379]	.47 (.14)	10.64	5.75 [330]	.35 (.07)	9.95	4.24 [377]	.48 (.13)	10.00
14 Pr y	4.23 [348]	.50 (.18)	10.23	6.03 [300]	.25 (.06)	9.03	3.93 [336]	.41 (.16)	8.85
15 Pr o	3.98 [379]	.49 (.20)	9.86	4.25 [330]	.45 (.13)	9.65	3.43 [377]	.47 (.18)	9.07
16 All y m	7.74 [133]	.52 (.22)	21.78	9.31 [103]	.46 (.16)	21.73	6.21 [123]	.46 (.27)	18.63
17 All y f	11.71 [215]	.42 (.12)	23.05	15.77 [197]	.23 (.04)	21.98	11.68 [213]	.33 (.09)	20.59
18 Pe y m	3.96 [133]	.54 (.18)	10.44	3.99 [103]	.62 (.20)	11.43	3.66 [123]	.38 (.16)	8.22
19 Pe y f	6.59 [215]	.37 (.09)	11.03	7.55 [197]	.32 (.06)	11.39	7.11 [213]	.23 (.04)	9.87
20 Pr y m	3.50 [133]	.54 (.21)	9.98	4.69 [103]	.34 (.09)	8.77	2.98 [123]	.47 (.27)	8.62
21 Pr y f	4.77 [215]	.46 (.16)	10.29	6.97 [197]	.17 (.03)	9.01	4.75 [213]	.34 (.10)	8.83
22 All o m	6.22 [175]	.61 (.31)	22.69	7.24 [159]	.52 9(.16)	21.28	5.37 [180]	.54 (.28)	19.95
23 All o f	12.03 [204]	.35 (.09)	21.48	14.29 [171]	.24 (.04)	20.77	9.52 [197]	.47 (.14)	22.21
24 Pe o m	3.83 [175]	.56 (.22)	10.55	4.51 [159]	.40 (.08)	9.31	3.48 [180]	.47 (.16)	9.12
25 Pe o f	6.58 [204]	.30 (.06)	10.18	7.36 [171]	.23 (.04)	10.12	5.37 [197]	.40 (.09)	10.17
26 Pr o m	3.41 [175]	.53 (.26)	9.77	3.02 [159]	.56 (.21)	9.74	2.86 [180]	.47 (.23)	8.50
27 Pr o f	4.74 [204]	.42 (.13)	9.78	5.81 [171]	.28 (.06)	9.17	4.26 [197]	.44 (.14)	9.54

All = 0-27 point scales
Personal, Property = 0-12 point scales
Pe = personal
Pr = property
y = young
o = old
m = male
f = female