

A Taxonomy of Terror - About the Effect of Different Kinds of Terror on Risk Perceptions

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ABSTRACT

Terrorism is an increasing problem; still, research systematically investigating the impact of varying kinds of terrorism is scarce. The present investigation uses hypothetical scenarios to look at effects of diverging sorts of terrorism on risk perceptions in a student- and a tourist sample. Two characteristics of terrorism were varied systematically: *frequency* (whether terrorism hits a destination where terrorism is frequent or infrequent) and *degree of organization* (whether terrorism is committed by an organization or by an isolated perpetrator). Results show that both variables affect the level of perceived risk. Results are also in line with prospect theory's [Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47 (2), 263–291] predictions regarding changes in risk perceptions. Findings thus provide a taxonomy of how terror characteristics affect level of and changes in perceived risk. This taxonomy might possibly be useful for predicting tourists travel decisions and behaviour.

ARTICLE HISTORY

Received 17 March 2015
Accepted 23 December 2015

KEYWORDS

Risk perceptions; worry; terrorism risk; gambler's fallacy; prospect theory

Introduction

Terrorism has been termed “a new species of trouble” where the stakes are high and the uncertainties enormous (Slovic, 2002) and there has been an intensive focus on the risk which terrorism imposes on modern societies. This is evident both in the social sciences and in the public discourse. Nolen-Hoeksema (2010) has claimed that an impression of an overflow of natural disasters, political crises, and acts of terror and war exists in the public's awareness, which has been created by mass media since the turn of the century. Examples of political crises and terrorism are many and attacks vary in characteristics from those that are carried out by terrorist organizations (e.g. 9/11) to those that are committed by isolated perpetrators (e.g. the 22nd of July in Norway). And while most terrorism is concentrated in a few countries (Global Terrorism Index Report, 2014), even countries that previously had been spared from terrorist attacks have been hit during the last decade (e.g. Charlie Hebdo). Indeed, the mere number of such events seems to justify this supposed impression in the public's awareness: As the Global Terrorism

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Index Report (2014) has shown, there has been more than a five-fold increase in fatalities caused by terrorism since the turn of the century, rising from 3.361 in 2000 to 17.958 in 2013. Nonetheless, the report also showed that over 80% of all terrorism occurred in only five countries, rendering the rest of the world as rather terrorism free.

Literature review

Subjective or perceived risk is defined as the individual's perception of the probability of certain negative outcomes weighed by the magnitude of these outcomes (Brun, 1994). Within the tourism domain, risk perceptions have been found to correlate with travel anxiety (Reisinger & Mavondo, 2005) and with destination choice (Sönmez & Graefe, 1998). Worry, on the other hand, is a key component of anxiety, and is characterized by a tendency to view ambiguous or uncertain situations as threatening (Butler & Mathews, 1987; Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994). In some cases, worry has been shown to be a better predictor of behaviour than risk perceptions (for example: Cameron & Reeve, 2006; Peters, Slovic, Hibbard, & Tusler, 2006).

The heightened attention given to the risk of terrorism is accompanied by a steadily increasing number of publications on the topic both within generic and applied domains. Still, there seems to be a surprising scarcity of research that moves beyond simple case studies and systematically investigates the impact of varying kinds of terrorism on the public in general and on the tourist population in particular. The aim of the present investigation therefore is to look at the specific effects of diverging sorts of terror on risk perceptions and worry. More specifically, it will be investigated whether terrorism committed by an organization is perceived differently from terrorism which is committed by an isolated individual, and furthermore, whether terrorism hitting a country where terror is frequent is perceived differently from terrorism hitting a country where terror is infrequent.

Within the tourism domain, statistics in many cases showed that the number of visiting tourists declined somewhat after terrorist attacks, for example, in Spain (Enders & Sandler, 1991), China (Gartner & Shen, 1992), Egypt (Wahab, 1996), Northern Ireland (Pizam, 1999), and the USA (Lepp & Gibson, 2003). Some research also focuses on how tourists perceive the risk of terrorism. It is evident from this research that tourists' perceptions of risk are effected by various events. Nonetheless, the effect of terrorism on risk perceptions is not as extensive as could be expected from the above-mentioned discourse and the extensive focus on the matter. Reisinger and Mavondo (2005) found risk perceptions to be correlated with travel anxiety and Sönmez and Graefe (1998) found that risk perceptions influenced destination choice among tourists. Gray and Wilson (2009) showed that political hazards, like terrorism, were perceived as more risky than physical and social hazards like, for example, the weather or a strange culture. In line with this, they reported that travel desire was reduced to a greater extent by political hazards than by physical and social ones. Sjöberg (2005) reported that perceived terrorism risk was quite low in a Swedish sample, and that participants judged others to be more at risk than themselves. Research also showed that tourists may disregard governmental advisories and travel to destinations threatened by terrorism (Fuchs, Uriely, Reichel, & Maoz, 2012; Uriely, Maoz, & Reichel, 2007).

In order to study the direct effect of terror attacks on risk perceptions, one needs to compare before- and after measures of perceived risk for a given terror struck destination.

Since terrorism in its very nature is unpredictable and since it is impossible to know where the next attack will hit, such data are, of course, very difficult to obtain. Still, there are some examples of research that has studied before- and after effects of terrorism on risk perceptions. In doing so, these investigations avoid a large number of problems that are associated with employing after-measures only, like, for example, hind sight bias, faulty memories and perceptions skewed by expectations.

Larsen, Brun, Øgaard, and Selstad (2011) investigated the effect of the train bombings in Madrid in 2004 and the effect of the bomb attacks on London's public transport system in 2005. They found that participants' general desire to travel and risk judgements for other destinations remained unchanged. However, there were direct effects of the terror attacks on tourists' perceived risk regarding Madrid and London, respectively. Participants reported increased risk perceptions for Madrid as a holiday destination, and for London, as a holiday destination the year following each attack. Brun, Wolff, and Larsen (2011) found that the terrorist attacks in London and Sharm el Sheik in 2005 were associated with an increase in tourists' worries about terrorism, as well as an increase in the percentage of tourists who believed that the world had become more dangerous as a consequence of the "War on terror".

The present investigation is particularly concerned with findings reported by Wolff and Larsen (2014) who investigated tourists' risk perceptions and worries before and after the July 22nd attacks in Norway in 2011. They found that risk perceptions and worry remained constant for several years, and were unaffected during the first few weeks following the attack. However, in 2012, they observed a decline in risk perceptions and worries regarding terrorism among both domestic and international tourists. Furthermore, in 2012, there was a substantial proportion of participants who believed that Norway (but not the world) had become safer after the terror attacks in 2011. The authors discussed several possible explanations and speculated whether this counterintuitive finding could be understood as a case of the gambler's fallacy.

The gambler's fallacy is a well-known cognitive bias where people assume that chance is a self-correcting process, where aberrations in one direction make aberrations in the opposite direction more likely so that the equilibrium will be restored (Tversky & Kahneman, 1971, 1974). An example typically used to illustrate the phenomenon is coin-tossing: People often believe that getting several heads in a row, increases the chances for getting a tail on the next flip. Following this logic, Wolff and Larsen (2014) wondered whether participants in their study might have fallen victim to the gambler's fallacy. If tourists perceived Norway as a safe destination which had been hit by a random perpetrator, they might (erroneously) conclude that this by itself reduces the likelihood of terrorism during the near future. The authors called for future research to investigate this question.

If the findings by Wolff and Larsen (2014) are to be a case of the gambler's fallacy, at least two conditions need to be fulfilled. First, the event must be seen as very rare and unlikely, that is, tourists must perceive Norway as a very safe country, free from terrorism. Data indicate that this is the case (Larsen et al., 2011; Wolff & Larsen, 2014). Second, the event must be perceived as a random event. In the case of terrorism, this might mean that it is *not* committed by an organization with numerous supporters, but rather by an isolated, deranged (and captured) individual. The 22nd of July attacks also seem to fulfil this condition. Experts have described the perpetrator as a black swan (for example: Kristiansen, 2012) and a lone wolf (for example: Mudde, 2011), and there have been conflicting

reports and widespread discussions regarding his sanity in the popular media (for example: Andersen, Grivi Brenna, Ravndal, Hopperstad, & Vikås, 2011).

One might argue that it is not the terror event itself, but rather the means that are undertaken in order to prevent future terror events that reduce people's risk perceptions following the 22nd of July. However, reviewing 36 peer-reviewed studies on the effect of terrorism on tourism, Voltes-Dorta, Jiménez, and Suárez-Alemán (2015) concluded that the reported study by Wolff and Larsen (2014) was the only one that did not reach the expected conclusion that terrorism had a negative effect on tourism. Seemingly, the 22nd of July attacks studied by Wolff and Larsen (2014) have some characteristics that are not shared by most of the terror attacks reported in the literature, which may be the reason why risk perceptions decreased in this particular case, but not in the other cases. As discussed by Wolff and Larsen (2014), terror attacks studied in previous research, are often executed by terrorist organizations, like the ETA in Spain, the IRA in Northern Ireland, Al Qaida in the USA, or the Hamas in the Middle East. This holds true for the studies of the London and Madrid bombings (Larsen et al., 2011) and the Sharm el Sheik attacks (Brun et al., 2011) which both found increased risk perceptions following terror. The case of the 22nd of July terror seems to differ from these kinds of terrorism, in that it hit a destination which is not normally ridden by terrorism and in that the perpetrator was an isolated individual, not part of a terror organization.

From the discussion above, it is apparent that various features of terrorism, like the degree of organization or the frequency with which it hits a given destination, might affect risk perceptions and worries quite differently. The aim of the present study therefore is twofold. First, it aims at investigating whether the counterintuitive decline in worry and risk perceptions following the 22nd of July, reported by Wolff and Larsen (2014), can be explained by the gambler's fallacy. The second purpose is more generally to study the effect of various terrorism characteristics on risk perceptions and worry.

This can only be done by experimental research which systematically varies the dimensions of interest, keeping all other variables constant. Therefore, hypothetical scenarios were employed which systematically varied the two characteristics of terrorism in focus, that is frequency (whether terrorism hits a country where terrorism is frequent or infrequent) and degree of organization (whether terrorism is committed by an organization or by an isolated perpetrator).

Several hypotheses about the effects of frequency and degree of organization on risk perceptions and worry are reasonable:

First, it is reasonable to expect that risk perceptions will be higher at destinations where terrorism is frequent and at destinations where terrorism is committed by organizations, and most likely risk perceptions will be highest at places where terrorism is both frequent and organized. In other words, there will be positive main effects of frequency and degree of organization on risk perceptions and worry.

Second, prospect theory (Kahneman & Tversky, 1979) predicts that the impact of a given change in probability increases as probability approaches impossibility and certainty. For example, if the perceived probability of terrorism changes from close to none (impossibility) to 1%, this will have a greater impact on risk perceptions than changes from 10% to 11%. According to prospect theory, it is the relative, not the absolute, increase in probability that is important. In these terms, an increase from 0% to 1% looms larger than an increase from 10% to 11%. Tversky and Kahneman (1981) demonstrated, for

example, that people may drive across town to buy a \$10 calculator instead of a \$15 one, but forego the same trip to purchase a \$125 jacket for \$5 less; because they illogically believe that the greater percentage saved on the calculator makes the trip more worthwhile. This psychophysical notion of diminishing sensitivity has been consistently demonstrated across many domains (for example: Fechner, 1860; Rottenstreich & Hse, 2001; Winter & Parker, 2007).

Since it is unreasonable to assume that the perceived probability of being hit by terrorism at a destination approaches certainty (100%), prospect theory predicts that changes in terror probability will have decreasing impact the more they depart from zero probability. In other words, the higher the perceived baseline risk, the less impact terror attacks will have, and the less risk perceptions will change because of them. Prospect theory therefore predicts that the largest changes in risk perceptions will be observed following terror attacks that are organized, but hit destinations where terrorism is *infrequent*; and changes will be smallest where attacks are organized and hit destinations where terrorism is frequent.

Note that events which are unorganized are likely to be perceived as random and may therefore not lead to increases in perceived probability. On the contrary, given the right circumstances, they may lead to decreases in perceived probability. This logic leads to the third hypothesis of this study:

If the gambler's fallacy influences risk perceptions and worry after terror attacks, one must expect risk perceptions to decline after a terror attack that hits a destination where terrorism is very low in frequency and which has been committed by an isolated (and captured) perpetrator. This is the only scenario that fulfils the criteria of the gambler's fallacy, namely the occurrence of a random event (unorganized terror attack) which is seldom (low frequency of terrorism). In all other situations, either no change or an increase in risk perceptions and worry is to be expected.

Summing up several assumptions on the effect of terrorism on tourists risk perceptions and worries and possibly even travel behaviour can be made: 1. Destinations with highly frequent and organized terrorism are perceived to be the riskiest and tourists worry most about terror at these destinations. 2. *Changes* in risk perceptions and worry will be greatest after terror attacks that are committed by organizations at destinations where terrorism is very rare. 3. Terrorism committed by an isolated and later captured perpetrator that hits destinations where terrorism is very rare might even reduce risk perceptions and worry at that destination. As Reisinger and Mavondo (2005) and Sönmez and Graefe (1998) have demonstrated, risk perceptions correlate with travel anxiety and destination choice. Findings regarding perceived risk and worry might therefore influence tourists travel behaviour.

Material and methods

Sample

Two different samples were used to test the present hypotheses. The first data collection was undertaken among psychology minors and natural science minors at the University of Bergen, Norway, during two different introductory courses in 2013. Respondents filled in a short questionnaire during a lecture break. It took students

Table 1. Sample demographics.

<i>Students</i>	
<i>N</i>	379
Mean age (SD)	20.78 (2.957)
Females	68.1%
Psychology minors	70.2%
Natural sciences minors	29.8%
<i>Tourists</i>	
<i>N</i>	826
Mean age (SD)	41.61 (17.018)
Females	54.5%
Top 10 nationalities	
Great Britain	14.57%
Germany	12.45%
USA	9.47%
Norway	8.47%
France	7.35%
The Netherlands	6.97%
Spain	4.73%
Switzerland	4.11%
Australia	2.99%
Italy	2.99%

SD = Standard deviation.

about 10 minutes to fill in the questionnaire and they did not receive any form of compensation. Response rates were very high, about 90%. A total of 379 completed questionnaires were returned.

The second data collection was done among tourist to Norway during the summer season of 2014. A research assistant approached participants at popular tourist sites in Western Norway and asked whether they were tourists and whether they would fill in a questionnaire concerning different aspects of holidaymaking. The sites were chosen because they were low threshold sites that most tourists would visit during a trip to the area, as for example, Mount Fløien or the Tourist Information Office both in the city of Bergen. Inevitably, participants constitute a convenience sample from the indeterminate population of tourists to the current area. The questionnaire was administered in English (the translation was done by the authors) and took 15 minutes to fill in. Participants did not receive any form of compensation. Response rates were very high, about 90%. A total of 826 completed questionnaires were collected including participants from altogether 57 different countries. Table 1 displays the demographics of both samples. One-way ANOVA revealed that age and gender were equally distributed in all experimental groups both in the student- and in the tourist sample (Student sample, gender: $df = 365$, $F = .87$, $p = .53$; age: $df = 361$, $F = .50$, $p = .84$; Tourist sample, gender: $df = 809$, $F = .55$, $p = .80$; age: $df = 806$, $F = .88$, $p = .52$).

Design

Participants were asked to imagine that they were a tourist on a roundtrip in a hypothetical country that had been struck by a terrorist attack. Two characteristics of the attack were systematically varied: (1) Frequency (whether terrorism was a *high in frequency* or *low in frequency* in that country), and (2) degree of organization (whether the terror was *organized*, that is committed by an organization or *unorganized*, that is committed by a

single and deranged individual who had been captured). This resulted in four different terror scenarios (see [Appendix](#) for all scenarios):

- (1) Low frequency/unorganized: a country where terrorism is seldom; and where the attack was committed by a single and deranged individual who had been captured. This scenario was meant to resemble the 22nd of July situation in Norway in 2011.
- (2) Low frequency/organized: a country where terrorism is seldom; and the present attack was committed by an organization. One might say that this scenario resembles the attacks at Charlie Hebdo in France in 2015.
- (3) High frequency/unorganized: a country where terrorism is common; and the present attack was committed by a single and deranged individual who had been captured. This scenario can be said to resemble gun-downs in US high schools.
- (4) High frequency/organized: a country where terrorism is common; and the present attack was committed by an organization. It is probably fair to say that this scenario resembles the situation in Israel.

Participants were randomly assigned to one of the four scenarios. Within each scenario, half of the participants read a description of the country *before* the terror attack and then rated their perceived risk and worry. The other half of the participants read a description of the country and the terror attack *after* the attack and then judged their perceived risk and worry. This constitutes a 2(low/high frequency) × 2(unorganized/organized) × 2(before/after terror) design, resulting in eight groups in both samples. This between-subjects procedure was chosen because it replicates the methods employed by Wolff and Larsen (2014). It allows for a comparison of before and after measures, thus avoiding the influence of memory bias.

Measures

Perceived destination risk, perceived terrorism risk, and terror worry were assessed as described by Wolff and Larsen (2014). Destination risk was assessed as follows: *How risky is this country as a travel destination?* Perceived terrorism risk was measured by the following item: *How risky is this destination regarding terrorism?* And worry was assessed by this item: *How much would you worry about terrorism during this trip?* All items were answered on 7-point scales anchored by 1 – *not risky/not at all* and 7 – *very risky/very much* respectively.

Participants in the after-terror-conditions also indicated whether terrorism risk had changed after the attacks: *Do you think the risk for terrorism in this country has changed after the bombs?* Answers were given on a 7-point scale anchored by 1 – *yes, lower*; 4 – *no, unchanged* and 7 – *yes, higher*. Scores from 1 to 3 were coded as decreased risk, 4 was coded as unchanged, and scores from 5 to 7 as increased risk.

Data analysis

One-way MANCOVA and pairwise comparisons (Bonferroni correction) were used to compare the effect of the various terror scenarios on destination risk, terror risk and terror worry. Age, gender and whether one belonged to student- or tourist sample were

included as covariates. Main effects for frequency and degree of organization were tested using independent sample *t*-tests.

Results

Using Wilks's lambda, there was a significant effect of the scenarios on destination risk, terror risk and terror worry ($\Lambda = .79$, $F(3271, 143) = 13.08$, $p < .001$, partial $\eta^2 = .074$). Results also show that group differences are mainly explained by the independent variable, that is, the terror scenario (see Tables 4 and 6). There is a tendency for younger respondents to report slightly higher risk perceptions and worry than older respondents, for women to report slightly more worry, and for students to have somewhat elevated scores compared to actual tourists. Effect sizes for all covariates are rather small (all partial $\eta^2 < .017$). Effect sizes for the independent variable, that is, the terror scenario, are moderate to large (partial $\eta^2 = .119-.215$) (Table 3).

The main effects of frequency and degree of organization on risk perceptions and worry can be observed in Table 2. Both in the before-terror- and in the after-terror-conditions, it is clear that terrorism which is high in frequency results in higher risk perceptions and higher worry than terrorism which is low in frequency. Furthermore, terrorism which is organized results in higher perceived risk and higher worry than unorganized terrorism in both the before- and after-terror-conditions.

Table 4 presents mean values for all four terror scenarios and displays results from pairwise comparisons of before- and after-terror measures. For scenario (1) *low frequency/unorganized* (the 22nd of July scenario), there are no significant changes in risk perceptions and worry after the terror attack compared to the before measures. However, the tendency in the data is towards a slight increase of perceived risk and worry after the terror attack. In scenario (2) *low frequency/organized*, a significant increase in all measures of perceived

Table 2. Main effects of frequency and degree of organization of terror on risk perceptions and worry.

	M	SD	M	SD	df	t-test t	Cohen's d
<i>Before terror</i>							
	Low frequency		High frequency				
Destination risk	1.76	1.11	2.54	1.57	583	-6.92***	.57
Terror risk	1.93	1.12	2.95	1.69	583	-8.61***	.71
Terror worry	1.65	1.13	2.57	1.80	582	-7.35***	.61
	Unorganized		Organized				
Destination risk	1.76	1.03	2.54	1.62	583	-6.98***	.57
Terror risk	2.01	1.15	2.87	1.72	583	-7.15***	.59
Terror worry	1.65	1.12	2.56	1.81	582	-7.35***	.60
<i>After terror</i>							
	Low frequency		High frequency				
Destination risk	2.19	1.32	2.81	1.61	591	-5.09***	.42
Terror risk	2.31	1.39	3.07	1.75	588	-5.87***	.48
Terror worry	2.14	1.43	2.82	1.79	589	-5.16***	.42
Terror change	3.97	1.38	4.12	1.32	581	-1.38	.24
	Unorganized		Organized				
Destination risk	2.07	1.20	2.95	1.65	591	-7.47***	.61
Terror risk	2.30	1.37	3.09	1.77	588	-6.11***	.50
Terror worry	2.08	1.34	2.90	1.85	589	-6.22***	.51
Terror change	3.76	1.23	4.34	1.40	581	-5.25***	.44

Notes: Mean values on a scale from 1 (low) to 7 (high). Bonferroni adjusted criteria for significance was $p = .004$.

*** $p < .001$.

Table 3. Results for separate analysis of covariance for risk perceptions and worry for all terror scenarios.

	Df	SS	MS	F	p	Partial η^2
Being a student (covariate)						
Destination risk	1	9.28	9.28	5.15	.023	.004
Terror risk	1	9.84	9.84	4.88	.027	.004
Terror worry	1	18.64	18.64	8.61	.003	.007
Being male (covariate)						
Destination risk	1	1.00	1.00	.56	.456	.001
Terror risk	1	2.71	2.71	1.34	.247	.001
Terror worry	1	12.88	12.88	5.95	.015	.005
Age (covariate)						
Destination risk	1	5.16	5.16	2.86	.091	.003
Terror risk	1	21.45	21.45	10.64	.001	.009
Terror worry	1	10.02	10.02	4.63	.032	.004
Terror scenario (independent variable)						
Destination risk	7	407.98	58.28	32.33	<.001	.166
Terror risk	7	493.08	70.44	34.93	<.001	.176
Terror worry	7	483.87	69.13	31.92	<.001	.164
Error						
Destination risk	1141	2057.09	1.80			
Terror risk	1141	2300.97	2.02			
Terror worry	1141	2471.18	2.17			

Table 4. Adjusted means for risk perceptions and worry comparing before and after terror scenarios. Pairwise comparisons, Bonferroni correction.

	Before terror		After terror	
	M	SD	M	SD
<i>Low frequency – unorganized</i>		<i>n</i> = 146		<i>n</i> = 156
Destination risk	1.54	.11	1.78	.11
Terror risk	1.69	.12	1.88	.12
Terror worry	1.37	.12	1.74	.12
<i>Low frequency – organized</i>		<i>n</i> = 151		<i>n</i> = 147
Destination risk	1.98 _a	.11	2.63 _a	.11
Terror risk	2.17 _a	.12	2.74 _a	.12
Terror worry	1.92 _a	.12	2.56 _a	.12
<i>High frequency – unorganized</i>		<i>n</i> = 149		<i>n</i> = 155
Destination risk	1.93	.11	2.36	.11
Terror risk	2.30	.12	2.70	.12
Terror worry	1.88	.12	2.41	.12
<i>High frequency – organized</i>		<i>n</i> = 146		<i>n</i> = 148
Destination risk	3.11	.11	3.31	.11
Terror risk	3.57	.12	3.53	.12
Terror worry	3.19	.12	3.31	.12

Note: Values in the same row sharing the same subscript are significantly different from each other at $p < .05$.

risk and worry can be observed. In the third scenario *high frequency/unorganized* and in the fourth scenario *high frequency/organized*, no changes in risk perceptions and worry can be observed in the after-terror measures compared to the before-terror measures.

Tables 5 and 6 display results from pairwise comparisons of the different scenarios regarding their perceived risk and worry. It is apparent that scenario (1) *low frequency/unorganized* is the lowest in the risk hierarchy, followed by scenario (2) *low frequency/organized*, and (3) *high frequency/unorganized*, and with the fourth scenario *high frequency/organized* at the top of the ranking. This ranking reflects the effect of frequency and degree of organization on risk perceptions and worry. The scenario which is neither frequent nor organized ranks lowest, the scenarios that are either frequent or organized

Table 5. Results for separate analysis of covariance for risk perceptions and worry for before- and after-terror scenarios, respectively.

	df	SS	MS	F	p	Partial η^2
<i>Before terror</i>						
Being a student (covariate)						
Destination risk	1	.79	.79	.49	.486	.001
Terror risk	1	2.42	2.42	1.35	.245	.002
Terror worry	1	2.42	2.42	1.23	.268	.002
Being male (covariate)						
Destination risk	1	3.36	3.36	2.06	.152	.004
Terror risk	1	6.36	6.36	3.57	.059	.006
Terror worry	1	11.01	11.01	5.60	.018	.010
Age (covariate)						
Destination risk	1	5.15	5.15	3.15	.076	.006
Terror risk	1	5.42	5.42	3.04	.082	.005
Terror worry	1	1.56	1.56	.79	.374	.001
Terror scenario (independent variable)						
Destination risk	7	192.12	64.04	39.17	<.001	.172
Terror risk	7	276.91	92.30	51.76	<.001	.215
Terror worry	7	258.00	86.00	43.75	<.001	.188
Error						
Destination risk	567	926.99	1.63			
Terror risk	567	1011.09	1.78			
Terror worry	567	1114.65	1.97			
<i>After terror</i>						
Being a student (covariate)						
Destination risk	1	11.38	11.38	5.78	.017	.010
Terror risk	1	8.36	8.36	3.72	.054	.006
Terror worry	1	21.15	21.15	8.99	.003	.016
Being male (covariate)						
Destination risk	1	.14	.14	.07	.793	.001
Terror risk	1	.03	.03	.01	.913	.001
Terror worry	1	3.26	3.26	1.39	.239	.002
Age (covariate)						
Destination risk	1	.95	.95	.48	.488	.001
Terror risk	1	17.41	17.41	7.75	.006	.013
Terror worry	1	9.85	4.19	9.85	.041	.007
Terror scenario (independent variable)						
Destination risk	3	173.49	57.83	29.35	<.001	.134
Terror risk	3	197.53	65.84	29.33	<.001	.134
Terror worry	3	180.72	60.24	25.61	<.001	.119
Error						
Destination risk	571	1125.10	1.97			
Terror risk	571	1281.99	2.25			
Terror worry	571	1342.86	2.35			

Table 6. Adjusted means for risk perceptions and worry comparing various before-terror scenarios and various after-terror scenarios, respectively.

	Low frequency unorganized		Low frequency organized		High frequency unorganized		High frequency organized	
	M	SD	M	SD	M	SD	M	SD
<i>Before terror</i>								
Destination risk	n = 146		n = 151		n = 149		n = 146	
Destination risk	1.54 _a	.11	1.99 _a	.11	1.94 _b	.11	3.10 _{ab}	.11
Terror risk	1.69 _{ab}	.11	2.19 _a	.11	2.30 _b	.11	3.58 _{ab}	.11
Terror worry	1.37 _{ab}	.12	1.93 _a	.12	1.89 _b	.12	3.20 _{ab}	.12
<i>After terror</i>								
Destination risk	n = 156		n = 147		n = 155		n = 148	
Destination risk	1.78 _{ab}	.12	2.63 _a	.12	2.35 _b	.12	3.30 _{ab}	.12
Terror risk	1.87 _{ab}	.12	2.74 _a	.13	2.70 _b	.12	3.52 _{ab}	.13
Terror worry	1.74 _{ab}	.13	2.56 _a	.13	2.40 _b	.13	3.31 _{ab}	.13

Notes: Pairwise comparisons, Bonferroni correction. Values in the same row sharing the same subscript are significantly different from each other at $p < .05$.

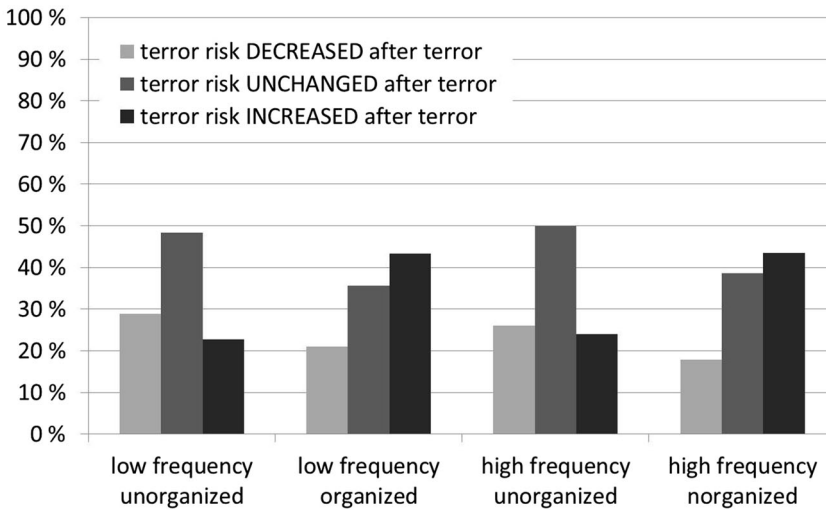


Figure 1. Proportions of participants who believed terror risk had changed/remained unchanged after the terror attacks.

take an intermediate position, and the scenario which is both frequent and organized is at the top of the ranking. In other words, there is an effect of both frequency and degree of organization on risk perceptions and worry. The more there is of both, that is, the higher the frequency of terrorism and the more organized the terror is, the higher will risk perceptions and worry be.

Figure 1 displays the proportions of participants who believed that terror risk had decreased, had remained unchanged, and had increased after the terror attacks. It is apparent that in the *unorganized* conditions, the biggest proportion of participants believe that the terror risk remained unchanged. Furthermore, the number of participants who believed that terror risk had decreased is larger than the number of participants who believed that it had increased. This effect is most pronounced in the *low frequency/unorganized* condition (the 22nd of July scenario). In the *organized* conditions, however, the greatest proportion of participants believed that terror risk had increased and the smallest proportion are participants who believed that terror risk had decreased. Comparing scenarios with a low frequency of terrorism to scenarios with a high frequency of terrorism reveals that participants do not report that these scenarios differ in how much the risk of terrorism has changed following an attack. However, comparing terror scenarios with unorganized terrorism to scenarios with organized terrorism reveals that participants believe that risk has increased more for organized than for unorganized terror scenarios (see Table 2).

Discussion

In line with the initial hypothesis, significant main effects were observed for frequency and degree of organization. Participants reported more worry and greater perceived risk for

destinations where terrorism was high in frequency compared to destinations where terrorism was low in frequency, and for destinations where terror was committed by organizations compared to destinations where it was committed by an isolated (and captured) perpetrator. The ranking of the different scenarios according to their degree of perceived risk and worry reflects those effects. The scenario where the terror is neither frequent nor organized ranks lowest; the scenario where the terror is both frequent and organized ranks highest. The scenarios where the terror is either frequent or organized hold intermediate positions.

These findings are highly interesting and allow for predictions regarding how tourists and others might perceive the risk of terrorism in different countries. Countries, like for example Israel or Turkey, where terrorism is frequent and committed by organizations, will be perceived as the most risky destinations. Countries where acts of terror are infrequent but committed by an organization, like, for example, ETA in Spain, together with countries where acts of terror happen more frequently but without being organized, like, for example, gun-downs at high schools in the USA, will be perceived as moderately risky. And finally, countries where terrorism is infrequent and unorganized, like the Nordic Countries or Germany will be perceived as the safest destinations. Since risk perceptions have been shown to correlate with both travel anxiety (Reisinger & Mavondo, 2005) and destination choice (Sönmez & Graefe, 1998), one might expect that risk-averse tourists were least interested in travelling to counties that are ridden by frequent and organized terrorism and most interested in visiting countries where there is no terrorism. Destinations where terrorism is either frequent or organized (but not both) should be moderately attractive choices.

A further hypothesis was that changes in risk perceptions and worry following a terror attack would be greatest for a destination where terrorism is organized but *infrequent*, and smallest for a destination where terror is organized and frequent. Results support this hypothesis. The only scenario where a terror attack resulted in significantly increased risk perceptions and worry was for the destination where terror is *infrequent* but organized. Comparing before and after measures reveals a tendency towards an increase in risk perceptions and worry for most destinations after a terror event. There is one exception, the destination where terrorism is both frequent and organized. Here, no changes in risk perceptions or worry were observed. These findings are entirely in accordance with the psychophysics of diminishing sensitivity (Fechner, 1860) and prospect theory's notion of the non-linearity of probability weighing discussed above (Kahneman & Tversky, 1979). This implies that the greater the perceived risk is to begin with, the more drastic an event must be in order to further increase risk perceptions. The lower the base line risk perceptions are, the greater the impact of an event will be on perceived risk.

Results have similar implications as the findings discussed above. They allow for predictions to be made regarding the impact of different sorts of terror on risk perceptions and worry. In countries where terrorism is organized and relatively frequent and risk perceptions are relatively high to begin with, yet another terror attack may not change people's risk perceptions at all. However, in countries where terrorism is organized but relatively *infrequent*, increased risk perceptions and worry after a terror attack are to be expected. As discussed above, this is what Larsen et al. (2011) and Brun et al. (2011) reported after the terror attacks in Madrid and London in 2004 and 2005.

The most recent events with such characteristics (that is infrequent but organized terrorism) are the terror attack at Charlie Hebdo in Paris in January 2015 and the multiple and highly organized attacks in Paris in November 2015. The fact that the public's response to these attacks was so enormous while terrorism affecting far more people in other parts of the world receives relatively less attention might not only be explained by the fact that they happened in the heart of Europe. The response may also be explained by the fact that the attacks were committed by organized perpetrators and hit a country where terrorism until now was infrequent. Thereby the attacks caused an increase in risk perceptions and worry, which will not be observed in other parts of the world where terrorist attacks are horrible but far more frequent.

For the tourism industry, this finding might imply that the greatest reductions in visiting tourists might be expected after terror attacks that are committed by organizations at destinations where terrorism is very rare. However, attacks that take place at destinations where terrorism is frequent might not have a huge impact on the visiting numbers of tourists. More research is, however, needed to test these assumptions.

A further aim of the present study was to test the proposition made by Wolff and Larsen (2014) that the reported decrease in risk perceptions and worry after the 22nd-of-July-attacks in Norway could be explained by the gambler's fallacy. If this was to be the case, there should be a decrease in risk perceptions and worry in the scenario where terrorism was infrequent and unorganized. This is because this is the only scenario that fulfils the criteria that need to be met for the gambler's fallacy to occur, namely the occurrence of a random event (unorganized terror attack) which is seldom (low frequency of terrorism). Results, however, do not support the hypothesis. There is no decline in perceived risk or worry. On the contrary, when comparing before and after measures, there is a tendency towards a slight but insignificant increase in risk perceptions and worry after the terror attack.

Nevertheless, asking participants in the after condition directly about whether they thought that terror risk had changed revealed that the gambler's-fallacy scenario is the only scenario where the proportion of participants believing that terror risk had decreased is clearly larger than the proportion of participants who believed that it had increased. This lends some partial support to the hypothesis that terrorism, given the right circumstances, might make us feel safer.

As discussed in the introduction, it is important to note that it is not the consequences of terrorism, like increased security measures aimed at lowering the risk of terror, that decrease risk perceptions. If this were the case, risk perceptions should decrease in all scenarios. In the case of the gambler's fallacy, it is the mere fact that the terror occurred that leads people to erroneously conclude that terror risk decreased.

Results are therefore somewhat inconclusive regarding the gambler's fallacy hypothesis. The data do not lend direct support to the idea that the results reported by Wolff and Larsen (2014) are a case of the gambler's fallacy. It is, however, possible that the present manipulation was inefficient in evoking the phenomenon. It is well known that people more easily fall victim to cognitive biases like the gambler's fallacy when they use an affective or intuitive mode of information processing (what has been labelled system (1), then when they employ more deliberate and controlled modes of information processing (labelled system (2); Kahneman, 2003; Stanovich & West, 2000). It is possible

that the 22nd of July event evokes more emotions and thus intuitive reasoning than a hypothetical terror scenario, thereby making people more susceptible to the gambler's fallacy. Future research might find better ways to evoke more intense emotions in order to study this phenomenon in a more realistic setting.

Nonetheless, one may conclude from the findings that terrorism committed by an isolated and captured individual at destinations where terrorism is very rare will not increase risk perceptions for that destination and hence most probably not affect the number of visiting tourists negatively.

The use of hypothetical scenarios is in fact a limitation that concerns the present investigation in general. Such scenarios might evoke somewhat less intense, possibly less emotional responses than actual events. If this, as discussed above, leads to a more cognitive or controlled way of information processing, subjects might estimate risks differently than in an ecologically more valid, or realistic setting. This shortcoming is, however, offset by the advantages that come with employing experimental designs. Only in this way can different characteristics of terrorism be manipulated, making it possible to conclude something about their causal effect on risk perceptions and worry. Future research could look at the ecological validity of the present findings. Still, results of field studies reported by Larsen et al. (2011), and Brun et al. (2011) do seem to support the ecological validity of the current investigation.

Another limitation concerns the fact that only convenience samples were employed. This might of course limit the generalizability of the findings. The rather large number of participants at least partly makes up for this weakness. It is also important to keep in mind that even though the two samples are really quite different (a sample of Norwegian undergraduates and a sample of tourists to Norway from all over the world), findings were entirely parallel. It is therefore reasonable to assume that findings are generalizable also to other populations. Apart from that, there is simply no way of recruiting random or even representative samples of tourists as they constitute a not clearly defined and ever-changing population.

To sum up, findings revealed that both the frequency of terrorism and its degree of organization do influence people's risk perceptions and worry. Participants report greater risk perceptions and worry for terror attacks that are frequent and for terror attacks that are committed by organizations. The highest risk perceptions are reported for terror that is both frequent and organized, the lowest for terror that is infrequent and unorganized. Findings also show that the largest changes in risk perceptions are to be expected for terror that hits a destination where terror is infrequent but organized, and the smallest changes in risk perceptions will occur at destinations where terror is frequent and organized. One cannot rule out the possibility that terrorism, given the right circumstances, namely being infrequent and unorganized, can even reduce risk perceptions. More research is needed to illuminate this question.

The present investigation is unique, in that it moves beyond simple case studies and employs experimental methodology to look at specific causal effect of varying characteristics of terrorism on tourists risk perceptions and worry. In doing so, it provides a taxonomy over how people perceive the risk of terrorism and over how their risk perceptions will change in response to diverging sorts of terror.

Acknowledgments

We are indebted to our late colleague and friend Professor Wibecke Brun (*1961–†2011) who contributed extensively during the initial phases of the present project. We want to thank Rouven Doran for reading and commenting on the manuscript.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix

Terror scenarios

Two terror characteristics were varied, frequency and degree of organization, resulting in four different scenarios. There was a before terror and an after terror version for each of the four scenarios resulting in a $2 \times 2 \times 2$ design. All measures are between subjects, that is, each participant read only one scenario, either the before or the after version.

Italics were added in the after terror versions of the scenarios.

Scenario 1: low frequency/unorganized

Imagine the following country: A small country with a couple of millions of inhabitants. Crime rates are low and the country did not participate in any wars during the last 50

years. Prosperity and level of education are around the average of the western world. Unemployment rates are also low.

The country is a democracy with regularly held elections, and the political life is organized into different political parties and interest organizations. Two population groups live in this country. The majority group populates the entire country, and a small minority mainly populates one area of the country. This country is known for its pleasant climate, its beautiful nature and its culinary specialties. Since the end of World War II, no acts of terrorism have been carried out, *until some months ago when 50 people were killed in two car bombs. An isolated individual has claimed responsibility for the killings. The perpetrator's motives for committing these acts of terror are unknown and it is doubtful that he is mentally sane.*

The perpetrator clearly operated alone and has been arrested. He has admitted the crime.
Imagine that you are a tourist on a round trip in this country.

Scenario 2: low frequency/organized

Imagine the following country: A small country with a couple of millions of inhabitants. Crime rates are low and the country did not participate in any wars during the last 50 years. Prosperity and level of education are around the average of the western world. Unemployment rates are also low.

The country is a democracy with regularly held elections, and the political life is organized into different political parties and interest organizations. Two population groups live in this country. The majority group populates the entire country, and a small minority mainly populates one area of the country. The minority wishes a separation of this area in order to establish an independent state. To accomplish this, the minority has organized a political party. Several decades ago, this organization also used acts of terror in order to achieve separation. Since the end of World War II, however, no acts of terrorism have been carried out, *until some months ago when 50 people were killed in two car bombs that the organization claimed responsibility for.*

A perpetrator who belongs to the organization has been arrested and has admitted the crime.

Imagine that you are a tourist on a round trip in this country.

Scenario 3: high frequency/unorganized

Imagine the following country: A small country with a couple of millions of inhabitants. Crime rates are low and the country did not participate in any wars during the last 50 years. Prosperity and level of education are around the average of the western world. Unemployment rates are also low.

The country is a democracy with regularly held elections, and the political life is organized into different political parties and interest organizations. Two population groups live in this country. The majority group populates the entire country, and a small minority mainly populates one area of the country. This country is known for its pleasant climate, its beautiful nature and its culinary specialties. Since the end of World War II, acts of terrorism have been carried out repeatedly by isolated individuals in this country. *The latest one happened some months ago when 50 people were killed in two car bombs that an isolated perpetrator has claimed responsibility for.*

The perpetrator clearly operated alone and has been arrested. He has admitted the crime.

Imagine that you are a tourist on a round trip in this country.

Scenario 4: high frequency/organized

Imagine the following country: A small country with a couple of millions of inhabitants. Crime rates are low and the country did not participate in any wars during the last 50 years. Prosperity and level of education are around the average of the western world. Unemployment rates are also low.

The country is a democracy with regularly held elections, and the political life is organized into different political parties and interest organizations. Two population groups live in this country. The majority group populates the entire country, and a small minority mainly populates one area of the country. The minority wishes a separation of this area in order to establish an independent state. To accomplish this, the minority has organized a political party. This organization is also known for their use of acts of terror in order to achieve separation. Since the end of World War II, recurrent acts of terrorism have been carried out. *The latest one happened some months ago when 50 people were killed in two car bombs that the organization has claimed responsibility for.*

A perpetrator who belongs to the organization has been arrested and has admitted the crime.

Imagine that you are a tourist on a round trip in this country.