

## Other Papers

*Polish Psychological Bulletin*  
 2013, vol 44(3), 358-370  
 DOI -10.2478/ppb-2013-0039

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### Perception of risk and risk-taking among the lucky and the luckless

**Abstract:** *The experience of good fortune and misfortune often reveals itself in the context of risk. We posed the question of whether there are differences between the lucky and the unlucky in perceiving and undertaking risky behaviours, and if these differences constitute predictors of good or ill fortune. A range of instruments were applied in the research to examine groups of lucky and unlucky individuals in respect of their propensity for taking risk, attitudes towards the risk occurring in various domains, the functions of risky behaviours and manner of taking risky decisions depending on the adopted perspective. The research results indicate a number of differences between the differentiated groups. It occurred that the lucky have a greater tendency than the unlucky to take risks, especially in the social and financial (investment) domains; they prefer instrumental risk; and they are more flexible in applying perspectives for potential outcomes when making risky decisions. We conclude that the results received can be interpreted in the context of predictors of good and bad luck.*

**Key words:** *luck, bad luck, risk taking, risk perception, counter-factual thinking*

*“You’ll never have a chance to get lucky if you don’t take a risk” (Ross Perot)*

#### Introduction; the phenomenon of good and bad luck in our lives

Studies have indicated that our quality of life is highly dependent on the capacity to exercise control over it, make our own decisions and choices, take personal responsibility, and in a general sense to be in charge of our own lives (Maciuszek, 2002).

On the other hand, while many may agree that what happens to us and influences our lives is also a question of chance, something uncontrolled. If someone found himself in the wrong time and place during some sort of accident, suffering as a result, we view this as his great misfortune. In the case of sport we speak about an athlete’s bad luck when she loses (especially when unexpectedly) as a result of unfortunate, random circumstances (e.g. an equipment failure). As for examples of luck, we may cite winning large sums of money in lotteries (where the statistical chances

are almost nil), or experiencing an unexpected success. The achievement of Wojciech Fortuna at the Sapporo Olympic Games is commonly associated with luck, and not only because of his surname. He had no previous (nor future) significant international successes, he qualified for the Games at the last possible moment, and he won the event by a mere tenth of a point over an outstanding Swiss ski jumper. We also speak of good luck when someone “miraculously” avoids misfortune, for example by missing a bus that is later involved in an accident.

Of interest is that good and bad luck can be assigned to certain people as an individual trait; day-to-day observations indicate that individuals differ as to what “fate brings them”. Some win lotteries, receive unexpected assistance, avoid misfortune, while others are “prone” to bad luck, have accidents, lose money, or find themselves in the wrong place at the wrong time. Both the subjective perception of an individual and the opinion of those around him may concur in viewing him as a particularly unlucky or lucky person (some are said to be “born lucky”). Many people are considered permanently lucky or luckless, and their good or ill fortune influences many aspects of their lives.

This manner of perceiving others (as well as oneself) is a social fact that inspired us to design and conduct

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the empirical studies described herein. The second source of inspiration were theoretical considerations associated with the traditional approach to studying good luck. As understood by psychology, good luck is most often associated with well-being, contentment and satisfaction with life, measured by the subjective assessment of their occurrence (see Czapiński, 2005). However, an understanding of good fortune as a lucky occurrence – as opposed to an incident of bad luck – occupies only a marginal place in empirical research. The primary issue explored by researchers on good luck concerns what causes us to experience the feeling of being lucky. This is also addressed to the experience of being a “lucky dog” or a “washout” – interest has been taken in the basis for judging that a given event constitutes good or ill fortune, or what causes us to consider ourselves lucky or unlucky people. Answers to these questions have most often been sought in the context of attribution theory and the counter-factual thinking construct.

### How do you know you got lucky?

#### *The role of attribution processes.*

The theory of attribution concerns the issue of how an average person constructs causal explanations for the behaviours and achievements of herself and of others (for example, why an individual has succeeded or failed at something). Good luck understood as positive happenstance is one of the elements in the taxonomy of attribution introduced by Weiner and his associates (Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971). As did Heider (1958) and Kelley (1967), they differentiate external and internal factors, introducing additional categories in the form of stable and variable factors. Good luck (or bad luck) is here assigned to the category of external variable factors, and is treated as a category that individuals may use in explaining success or failure (without referring to individual factors such as abilities or effort, or to more stable situational factors such as the difficulty of a task). Identifying good or ill fortune among the causes of a given event can be useful in protecting one’s self-esteem in the event of a failure (e.g. “I was so close to passing that exam, I just got unlucky this time”), or in the event of a success achieved by our rival (“She’s not really better than me, she just got lucky”).

According to Kelley (1967, 1972), in assessing one-off events we perform attribution by applying causal schemata, such as multiple sufficient causes (any one reason for an event sufficient to cause it; e.g. we assume that in solving a simple task it is sufficient that a pupil possess certain skills or makes a significant effort) and multiple necessary causes (a given event occurs necessarily as a result of many causes; e.g. for a pupil to solve a difficult task, both skills and significant effort are necessary). Kun & Weiner (1973) demonstrated that tasks interpreted as simple ones tend to activate the schema of multiple sufficient causes, while tasks judged as difficult activate the schema of multiple necessary causes. In the case of tasks whose successful completion should easily be achieved by a given individual (multiple sufficient causes) and yet we

observe their failure, we will more often perceive among the causes of such a failure an additional factor, such as some misfortune neutralizing the effect of sufficient causes. However, in the case of success in circumstances perceived as difficult, good fortune – more often than in the case of simple tasks – appears among the necessary causes cited for such an event (for success in important areas, skill and hard work are not enough; a bit of good luck is also necessary).

#### *“It could have been different” – the role of counter-factual thinking*

Counter-factual thinking concerns negative events in particular, and consists in creating positive scenarios for such events (*If I had chosen a different route, then ...; If I hadn’t been late, then ...*). However, it also consists in accounting for negative outcomes that could have occurred (*It’s a good thing I turned down that travel agency’s offer at the last minute, because I would have been out of a holiday and my money*).

The above examples indicate that counter-factual thinking may lead to an assessment of events in the categories of good and bad luck. This occurs because the perception of good and ill fortune is determined not only by what did happen, but also by what could have happened (distinction is made between comparing “down” – *it could have been worse and comparing “up” – it could have been better*). A comparison of factual circumstances with what potentially could have taken place (counter-factual thinking) aims “up” and “down” in different situations. Comparisons “up” are made when a negative outcome in a given situation comes as a surprise to us, while comparisons “down” are most often made when the course of events leads us to expect the worst (e.g. in situations beyond our control) or when we realize that a “catastrophe” was close at hand (Teigen, Evensen, Samoilow & Vatne, 1999). Research conducted by Teigen and associates (1999) lead them to conclude that bad luck is primarily associated with what actually happened (negative events that have in fact occurred), while good fortune is rather associated with what could have been (of prime importance for perceiving the condition of good luck in a given situation is counter-factual thinking). Comparisons “up” and “down” thus occur in various circumstances. Comparisons “down” do not necessarily accompany all positive or neutral outcomes, but rather only those in which the situation could obviously have been worse. However, comparisons “up” are generally made in the event of experiencing failure; indeed, positive or neutral results are the default expectation, and are cognitively more accessible (“it could have been better”).

Research by Johnson (1986) confirmed the role of counter-factual thinking in assigning the characteristic of good or ill fortune to various events when positive or negative outcomes were quite close to occurring, but in the end did not. The “near losers”, participants who just avoided experiencing a negative event, were assessed as being luckier than the control group, and the “near winners” – those who were close to experiencing a positive outcome – were viewed as having less good luck than individuals in the control group.

The paradoxical effect of counter-factual thinking has been observed in the case of Olympic medalists (Medvec, Madey & Gilovich, 1995). It might seem that silver medal winners should register greater feelings of joy and satisfaction from their results than bronze medal winners (indeed, they are higher on the podium). As demonstrated by research (Medvec et al., 1995) the truth is different. Bronze medal winners, in contrast to winners of silver medals, make comparisons “down” (“I could have not made it to the podium”). Silver medal winners concentrate with greater frequency on comparisons “up” (“I could have done it differently, and I would have a gold medal”). As a result, a bronze medal is often the source of a greater feeling of satisfaction than a second-place finish at the Olympics.

Counter-factual thinking demonstrates a strong association with the issue of risk-taking. Comparisons “up” generally occur when the unfavorable outcome of a given situation comes to us as an unpleasant surprise, such as when we take a calculated, minor risk and, in spite of our reasonable expectations, we lose. Comparisons “down” are primarily associated with situations involving significant risk, that is, those in which the chance of a positive result is small, or the consequences of failure can be serious. When a successful final is reached (or catastrophe avoided), it is easy to compare this with the potential consequences of an unfavorable outcome, and thus to feel that one got lucky in a given situation.

### Taking and perceiving risk

#### *Counter-factual thinking and risk*

If the perception of good luck is dependent on counter-factual imagining of a potentially worse result of a given event, one should expect that in risky situations people will often perceive lucky coincidence. Teigen (1998) conducted a study in which two groups of students were asked to describe an event in their lives exhibiting elements of risk (a dangerous situation, or one in which they behaved incautiously). It occurred that both the participants in the event as well as external observers more frequently perceived those situations as lucky than unlucky. What is more, a positive correlation was demonstrated between the level of estimated danger or incautiousness and the level of good luck. Good luck was also positively correlated with the estimated probability of a counter-factual negative outcome. The actors often felt that they were lucky – even in highly negative circumstances – if only the course of events suggested a greater likelihood of a catastrophic outcome. Teigen (1998) demonstrates that situations associated with risk in which we exercise little or no control over the situation easily generate notions of the potential negative outcomes of that situation. Such circumstances can ultimately be viewed as lucky, even if they conclude with a “normal” (average) result, as long as our worst fears remain unfulfilled.

#### *Aspects of risk, domains and functions*

“Risk and risk-taking are associated with tempting fate, playing with fire or with uncertainty as to the desirable

conclusion of an undertaking” (Studenski, 2004, p. 17). In psychological studies on risk, two key aspects of it are emphasized: uncertainty concerning the results of undertakings and the accompanying threat of danger, injury or loss (see Ratajczak, 2004). Risk as uncertainty in respect of the results of a given activity occurs when an individual operates in unfamiliar conditions, in unclear situations, when cognitive limitations appear such as the inability to forecast, ignorance of the rules, or the threat of an immeasurable loss (Ratajczak, 2004). The second key aspect of risk is the threat of failure and/or loss (Tyszka, 1986; Ratajczak, 1991; Cutter, 1993; Studenski, 2004). In taking risk we are faced with failure, which can mean not only the lack of a desired outcome, but also immediate injury or loss. Fishburn (1984) emphasizes this immutable association between risk and danger, writing simply about risk as the expectation of loss. Koziński (1975) feels that assessment of risk is composed primarily of the likelihood of failure and dimension of loss, and Goszczyńska (1997) lists among the aspects considered in the perception and assessment of risk the severity of the negative consequences.

Authors concerned with the issue of risky behaviour focus inter alia on areas in which risk is taken, on the potential effects of risky behaviours, and its aims and functions. The domains of life influenced by risky behaviour are distinguished as financial risk, health risk, social risk and ethical risk (Jackson, Hourany & Vidmar, 1972). Domurat & Tyszka (2000), apart from financial, social and health risk also mention anticipatory risk (associated with such behaviours as leaving one’s flat uninsured or driving without valid auto insurance). Weber, Blais & Betz (2002) also distinguish the financial, social, health and ethical domains. Additionally, however, aside from separating two particular domains from financial risk – investment risk and gambling risk – they also describe a fifth type of risk, defined as recreational risk (e.g. participating in extreme sports).

Zaleśkiewicz (2005), in concentrating on the goals motivating people to take risk, differentiates instrumental and stimulatory risk. The criterion for this division is whether we are focused on the outcome of our actions, or on the feelings that accompany them. Instrumental risk primarily occurs in situations involving the pursuit of defined aims, the desire to avoid losses or to achieve gains that are impossible without the assumption of risk. As for stimulatory risk, the primary motivation is the search for strong sensations, the desire to feel a jolt of emotion or to experience something exceptional. An earlier concept, also referring to the motives for engaging in risky behaviours, is the classification proposed by Michael Levenson (1990). Levenson based his research on the assumption that individuals seeking risk in the context of adventures (e.g. mountain climbers) would have different motivations from those taking socially beneficial risks (police officers and fire brigade members), as well as from those taking socially detrimental risks (e.g. drug users). He also assumed that undertaking a given type of risk should be associated with particular individual characteristics. This researcher differentiated two primary dimensions to which risky behaviours can be assigned.

One of them was labeled as antisocial risk, and the other as antistructural risk. Individuals seeking out antisocial risks are characterized by the need to experience intense sensations and a high level of emotional excitability. As for antistructural risk, the primary characteristics are a need for autonomy and tendency to seek adventure. Individuals taking antistructural risks associate them with achieving a defined goal, while those taking antisocial risks have as their primary aim the search for strong stimulation.

#### *Risk in prospect theory*

In the context of the issue of taking risky decisions, mention must be made of the prospect theory as developed by Tversky & Kahneman (1981). They remarked that in the decision-making process, especially in the case of risky decisions, of primary importance is, firstly, whether a given situation presents an opportunity for profit or is interpreted as a danger of loss, and secondly, the probability of occurrence of a desired or undesired result.

Initially, Tversky and Kahneman discovered that propensity or aversion to risk depends on whether a given problem is perceived in categories of risk or loss. If we are exposed to the danger of loss, we will be more likely to take risk. When profit is real, that is to say we have a guaranteed level of benefit, we will prefer to avoid risk (as Kahneman notes, we are far less enamored with losing than we are with winning). However, readiness to risk increases when the possible choices are bad ones (when we compare a certain loss with a second, greater loss that is only potential).

In developing their theory the authors took into account further important factors: the possibility of occurrence of a desired or undesired event, and the perceived dimensions (value) of the potential risk or loss. They also discovered that the weights assigned to particular results of an uncertain event were not identical with the probability of their occurrence. This is illustrated by the possibility effect and certainty effect. We may take four examples in which the probability that we will win a million dollars increases by 5%: 1) an increase in probability from 0% to 5%; 2) an increase in probability from 5% to 10%; 3) an increase in probability from 60% to 65%; 4) an increase in probability from 95% to 100%. The question arises of whether the psychological value of every increase in probability is identical. A change in probability from 5% to 10% means the chances of winning are doubled, but the psychological value of this possibility is not twice as great. What is more, this change is merely a quantitative one, in comparison to an increase in probability from 0% to 5% which makes for an entirely different situation by creating the chance for winning a prize that did not previously exist. This change has a greater psychological value for us and is associated with the so-called *possibility effect*, which results in scanty possible events being assigned great psychological importance, as is illustrated by participation in chance and gambling games. In turn, an improvement in probability from 95% to 100% evokes the so-called *certainty effect*, which results in nearly-certain results (95% chance of success) being assigned lesser weight than would result from the odds (Kahneman, 2011). The possibility effect and

certainty effect described here apply to both the spheres of profit and of loss.

Basing on the aforementioned factors, the creators of prospect theory differentiated four versions of attitude to risk (*the fourfold pattern*), two associated with aversion and two with the tendency to take risks. Risk aversion appears in two versions. Firstly, when the situation exhibits 100% certainty that a large reward will be received along with a high probability (e.g. 95%) that we will win even more if we risk losing everything, we are likely to select the smaller but definite reward (here the *certainty effect* is in play). Secondly, we avoid risk when there is the threat of serious loss, even though it is extremely unlikely (here the *possibility effect* operates, which results in such actions as buying insurance policies). Tendency to taking risk also appears in two versions. Firstly, when there is a small chance of very large profit (the *possibility effect* guides us in such situations as games of chance). Secondly, in the case of choosing from bad options; when faced with the threat of a 100% sure loss along with the significant danger that we can lose even more by taking a risk, we generally take that risk (rejection of a certain loss).

#### **Topic and aims of research**

In this work, we tackle the issue of the role of risky behaviours in experiencing good and bad luck, with particular emphasis on identifying differences between lucky and unlucky individuals in respect of their perception and assumption of risk. Our interest in this subject results from both theoretical considerations and everyday human experiences. Firstly, in attempts to explain the feeling of good luck by applying the construction of counter-factual thinking, reference is made to situations associated with risk (for example, when the chance of a positive result is small and the consequences of a negative outcome may be serious, a happy ending in the matter may lead to a feeling of good fortune based in the sort of thinking that “it could have been really bad”). Secondly, everyday observations indicate that the manner in which risk is approached – both its assumption, and the capacity to forecast and protect oneself – can lead to outcomes that are defined as either lucky or unlucky.

In previous empirical studies on luck, the issue of risk has been raised in the context of understanding the sources of good luck (a judgement of good luck depends on the estimation of the risk's dimensions). In this paper we focus on the question of whether a difference can be identified between the lucky and the luckless in their perception of and engagement in risky behaviours, and if these differences can be predictors of good or ill fortune.

Our primary research question concerns the issue of the approach taken by the lucky and the luckless to risk; do they differ in respect of assuming and perceiving risky behaviours in various life domains? Taking into consideration the prospect theory of Kahneman & Tversky (1981), we have posed the question of whether these two groups will display differences in the way they take decisions in risky conditions, depending on the perspective

adopted (the chance for profit or danger of loss; a large or small probability of success; the size of the potential profit/loss).

What theoretical conditions constitute the starting point for the planned research and allow for predictions to be formulated?

The association between the frequency of risk-taking and luck can be elucidated in two ways: firstly, risk-taking makes real success possible (luck as success achieved in conditions of uncertainty and impossibility to exercise control); secondly, danger – the handmaiden of risk – when avoided, can allow counter-factual thinking to lead to an assessment of outcomes in the context of good luck (the subjective feeling that we were lucky, because we avoided something far worse). The first aspect is linked to the Ross Perot quote (as a motto) at the beginning of the paper (*You'll never have a chance to get lucky if you don't take a risk*). In turn, based on the assumption that the perception of events as lucky ones is grounded at times in counter-factual thinking (imagining an alternative, detrimental course of events), it may be predicted that those individuals who take risks more often have a greater chance of feeling that they are lucky ones (counter-factual thinking can always produce worse imaginary outcomes). This means that those who experience a greater amount of risky situations bearing the threat of a negative outcome will have more opportunities to find themselves in a situation that may be assessed as a lucky circumstance. In essence, the greater the negative consequences we manage to avoid and the closer our proximity to them, the greater the chance that we will feel ourselves lucky.

We also assume that not every manner of risk-taking will lead to desirable results. It is obvious that failure to protect oneself from a negative outcome, a deficit of caution and lack of ability to predict will result in negative consequences, and may be perceived as a case of bad luck. Achieving success thanks to risk is dependent on the style of risk-taking, domains and manner in which perspectives are taken into account.

According to the concept developed by Zaleśkiewicz (2005), individuals displaying a dominant “style I” more often perceive risky situations in terms of probabilities, focusing on the potential for accomplishing a defined result, which requires greater cognitive engagement. Achievement of success is supported by an evaluation of risk in terms of the probability for success/failure, and of the potential benefits and losses (instrumental aspect of risk). Zaleśkiewicz claims on the basis of his research that individuals preferring style I have a tendency to undertake risk in primarily the financial (investment) and social domains. This allows us to predict that the lucky will more often undertake risk in these two domains than the unlucky. On the other hand, engaging in various types of activity linked with stimulative risk may lead to a greater number of situations in which, owing to counter-factual thinking and comparisons “down”, we can draw conclusions about being the beneficiary of good fortune. This is also applicable to the domain referred to as recreational risk. The above allowed us to formulate the following hypotheses:

1. The lucky have a greater penchant for risk-taking than do the luckless;
2. The lucky undertake both instrumental and stimulative risk more frequently than do the unlucky
3. The lucky are more likely to take risks in the social, financial (investment) and recreational domains than are the luckless;
4. The lucky and the unlucky differ in respect of propensity to take risk depending on the adopted perspective; the lucky take risks with more frequency than the unlucky when the probability of success is relatively high and the potential benefits or losses are large.

## Method

### Study participants and experimental procedure

Study participants came from three public universities (University of Białystok, Białystok Technical University and AGH University of Science and Technology in Kraków). A total of 582 participants undertook participation in the study, of which 557 returned the full set of instruments provided; only those individuals' results have been included in the analysis. Participants' ages were between 19-30, with a mean age of 21.5 (SD = 1.95); the youngest participant was 18 years old, and the oldest was 30. The research was performed in groups, and took place in lecture halls. Respondents received a set of research instruments with precise instructions for performing the task. The time needed for filling in questionnaires was between 20 and 30 minutes.

### Variables and their measurement

#### *The lucky and the luckless*

Measurement was performed using the original Good Luck/Bad Luck Inventory, which served to identify the lucky and luckless among study participants. The instrument is composed of two scales: good luck and bad luck. In the instrument's initial version, the good luck/bad luck scale contained a total of 16 items (declarative sentences) divided evenly between the good luck and bad luck scales. Following a pre-trial of a group containing over a hundred subjects and an exploratory variable analysis of the results (principle component analysis), items characterized by the lowest factor loadings were eliminated. The final version contains five items in each scale with one factor loading each, good or bad luck (factor loadings of items in the good luck scale had values between 0.64 and 0.83; in the bad luck scale from 0.63 to 0.78). The final version of the instrument was tested on another 100-person group of students of education and sociology, composed of representatives of both genders. Results recorded by subjects in the good luck/bad luck inventory were compared with those recorded in the good

luck inventory by R. Wiseman (2003), with calculation of the r-Pearson correlation factor. Correlation between the results of subjects from both instruments was high, at  $r = 0.85$ ;  $p < 0.01$ . Thus the Good Luck/Bad Luck Inventory (see attachment A) is composed of two scales: good luck and bad luck. The factor differentiated as good luck (on the good luck scale) explained 57% of total variation. The factor differentiated as bad luck (on the bad luck scale) explained 46.8% of total variation. The scales' internal coherence, expressed by Cronbach's alpha, is quite high and amounts to 0.80 for the good luck scale and 0.71 for the bad luck scale. When filling in the inventory, study participants responded to every item - formulated as a statement - by giving answers on a five-point scale from 1 (I disagree with the statement) to 5 (I agree with the statement). The result for a given scale (both good luck and bad luck) is the sum of point values from responses. For each scale the range of possible scores was from 5 to 25 points. The composite score on the Good Luck/Bad Luck Inventory (the 'good luck factor') falls within a range between -20 and 20 points, and is calculated by subtracting the score achieved on the bad luck scale from that achieved on the good luck scale.

#### *Penchant for risk*

Measurement was performed using the Test of Risky Behaviours (TRB) by R. Studenski (2004), which is designed to measure penchant for risk and is composed of 25 statements describing risky activities and the motivations for engaging in risky behaviours. Respondents perform self-assessment on a five-point scale, estimating the frequency of their participation in the risky situations presented and of experiencing motivation to take risks. The frequency scale is composed of values from 4 (very often) to 0 (almost never or never). The TBR result is calculated by adding up the point values of answers, and falls between 0 and 100 points. The test's reliability as estimated by Cronbach's alpha is very high, specifically 0.94.

#### *Perception of risk in terms of striving to achieve a goal or in terms of seeking pleasant stimulation*

Measurement was performed using the Stimulating-Instrumental Risk Inventory (SIRI) of T. Zaleskiewicz (2005). The inventory is composed of 17 items, of which ten measure style S (attitude to experiencing stimulation), and the remaining seven measure style I (goal orientation). Each item is responded to on a scale from 1 (I completely disagree) to 5 (I completely agree). The result is calculated by adding together the items measuring a given style. Results range from 10 to 35 points for style I, and 10 to 50 points for style S. Internal coherence of the inventory expressed by Cronbach's alpha is 0.73 for instrumental risk and 0.76 for stimulatory risk (Zaleskiewicz, 2005, p. 156).

#### *Risk-taking in particular domains of life*

Measurement was performed using the DOSPERT (Domain-Specific Risk-Taking) scale. This questionnaire is designed to diagnose individuals' attitudes towards the risk that occurs in five domains: financial, ethical, social, health/safety and recreational (two sub-scales can additionally be

differentiated within the financial domain – investment risk and gambling risk). The instrument is composed of 30 items appearing in the same form on two scales: 1) measurement of perception, and 2) measurement of risk-taking. In the scale for measuring "risk perception", respondents assess the level of risk for the behaviour described in a given item by choosing one of seven values, within a range of 1 (not risky at all) to 7 (extremely risky). On the "risk-taking" scale, answers are given in the same manner by assessing the probability of undertaking a given behaviour on a scale from 1 (highly unlikely) to 7 (highly likely). The result is calculated by adding the point values for answers in each of five domains within a given scale, and is located within a range between 6 and 42 points. The scales' reliability for individual domains as expressed by Cronbach's alpha is located between 0.71 and 0.86 for the risk-taking scale, whilst between 0.74 and 0.83 for the risk perception scale (Weber & Blais, 2006). To develop the Polish version of the DOSPERT scale, the English and French versions were translated into Polish. Two independent translations from English and one from French were performed. Next, a review and comparison of all three versions was undertaken in order to determine the final Polish-language version of the instrument.

#### *Risk-taking – various perspectives*

The original instrument is composed of eight questions concerning the preferred choice of action in a problematic situation (associated with taking or not taking risk). The questions present combinations of the following factors: the risk of loss vs. the chance to profit; a large vs. a small sum; a high vs. a low probability of profit/loss. Below, we present a question containing the factors of chance for profit, relatively high probability of success and small value to be gained.

*In a situation in which you are to receive a prize, what would you prefer:*

- a.) To receive a guaranteed \$10.
- b.) To participate in a lottery in which \$30 is won if a coin flip results in "heads", but nothing is won in the case of "tails".

Here is an example of a question concerning a situation in which there is a risk of loss, which can be guarded against by risking an even greater loss, but the chance of failure in taking the risk is low:

*In a situation in which, for some reason, you would have to pay a fine, what would you prefer:*

- a.) To pay a guaranteed \$100 fine.
- b.) To participate in a drawing in which there is a 10% probability of losing \$500, or nothing is lost.

## Results

Research participants were assigned on the basis of results from the *Good Luck/Bad Luck Inventory* to one

of three groups: 1. the lucky (N = 142), 2. the neutral (N = 278) and 3. the luckless (N = 137). The luckless group was defined as the lowest quartile of results on the Good Luck/Bad Luck Inventory (range of good luck coefficient from -12 to 0 points). The lucky were defined as those whose coefficient was in the upper quartile of results (from 9 to 18 points). Those whose good luck coefficient was in the second and third quartiles (1 to 8 points) were classified as the neutral group.

### Perception of and engagement in risky behaviours by the lucky and the luckless

#### Penchant for taking risk and frequency

Measurements of frequency of participation in the presented risky situations and of experiencing motivation inclining one to taking risk were performed using the *Test of Risky Behaviours* (TRB). A one-way analysis of variance indicated the presence of significant statistical differences between the study groups  $F(2, 550) = 8.25; p < 0.001, \eta^2 = 0.03$ . This is illustrated in Figure 1.

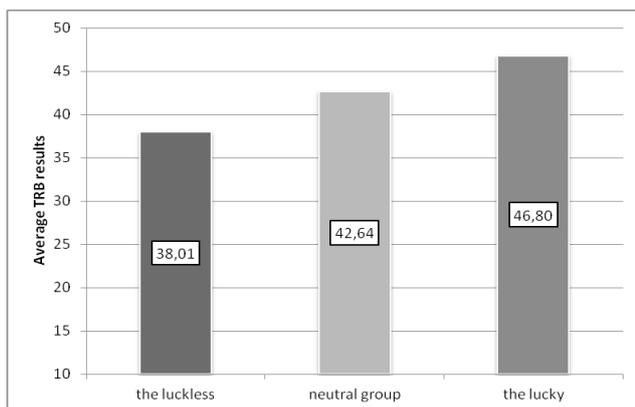


Figure 1. Average results for the lucky, the luckless and neutral respondents on the TRB test.

The greatest tendency to engage in risky behaviours was noted among the lucky. This group's average result ( $M = 46.80; SD = 17.97$ ) was significantly higher than that of the luckless ( $M = 38.01; SD = 18.33$ ) (Bonferroni post hoc test,  $p < 0.001$ ). It also occurred that the luckless took risks significantly less often than did neutral respondents ( $M = 42.64; SD = 17.89$ ; Bonferroni post hoc test,  $p < 0.05$ ). The difference between the lucky and neutral respondents was a non-significant (Bonferroni post hoc test,  $p = 0.078$ ).

The results of the Test of Risky Behaviours provided strong support for hypothesis 1, which predicted that the lucky would exhibit a greater tendency than the luckless to take risks. In the light of results obtained, it also occurred that respondents classified as luckless avoided risk noticeably more often than not only the lucky, but also the group of neutral respondents, those belonging to neither the

lucky nor the luckless.

#### Perception of risk in instrumental and stimulatory categories

The SIRI by Zaleśkiewicz (2005) concerns measurement of two styles of perceiving risky situations: style I (risk as a means of increasing the chances a goal will be achieved) and style S (risk as a source of positive emotions and pleasant stimulation). The results of a one-way analysis of variance exhibited differences in the perception of risky situations among individual groups, both in respect of style I ( $F(2.548) = 11.56; p < 0.001, \eta^2 = 0.04$ ), and of style S ( $F(2.548) = 9.14; p < 0.001, \eta^2 = 0.03$ ). In both styles of risk perception, results for the lucky were significantly higher than those for the luckless and the "neutral". However, differences between the lucky and the neutral were not statistically significant. Average results illustrating the differences in risk perception in respect of instrumental and stimulatory categories between the lucky, the luckless and average respondents are presented in Table 1.

Table 1.

Style I and Style S – average results: the lucky (N = 142), the luckless (N = 133) and neutral respondents (N = 276)

SIRI scale	Groups defined by the good luck coefficient	M	SD	Significance of the difference between groups; Games-Howell <i>post-hoc</i> test
Style I	luckless	23.71	3.69	neutral
	neutral	24.60	3.70	<b>lucky***</b>
	lucky	25.95	4.46	luckless <b>lucky**</b>
Style S	luckless	25.02	6.59	neutral
	neutral	25.92	6.21	<b>lucky***</b>
	lucky	28.19	6.85	luckless <b>neutral**</b>

Bold typeface indicates pairs of groups exhibiting significant differences at a level of:

The lucky are characterized to a greater degree than the luckless by a tendency to perceive risk in instrumental terms, in the context of achieving defined goals ( $p < 0.001$ ). This also means that the lucky, as was predicted, concentrate in risky situations on estimating potential benefits and losses, and also place greater emphasis on assessing the probability of success or failure. The lucky also differentiate themselves in this respect from neutral respondents ( $p < 0.01$ ), while

the group of neutral respondents achieved a higher result than the luckless ( $p = 0.06$ ). It also occurred that in respect of style S, the lucky generated significantly higher results than the luckless ( $p < 0.001$ ) and neutral respondents ( $p < 0.01$ ). This means that the lucky also take risks more readily when those risks are primarily associated with emotional stimulation, seeking a source of positive stimulation in risky situations.

#### *Perception of and engagement in risky behaviours in selected domains of life*

The DOSPERT scale is designed to diagnose attitudes towards risk in several domains of life in the framework of two scales: “risk-taking” (an assessment of the probability the subject will engage in a given behaviour) and “perception of risk” (assessment by the subject of how risky a given behaviour is).

A one-way analysis of variance revealed significant differences among average scores for risk-taking in the social domain ( $F(2.533) = 17.98$ ;  $p < 0.001$ ,  $\eta^2 = 0.06$ ), financial domain – investment risk sub-scale ( $F(2.533) = 8.42$ ;  $p < 0.001$ ,  $\eta^2 = 0.03$ ) and the recreational risk domain ( $F(2.533) = 10.09$ ;  $p < 0.001$ ;  $\eta^2 = 0.04$ ). A detailed comparison with the use of the Scheffé and Games-Howell post hoc tests is presented in Table 2.

In three domains (social, investment and recreational risk) the lucky gave significantly higher assessments than the other two groups (luckless, neutral) of the probability they would undertake a given risky behaviour. In the case of social risk, the lowest coefficient was obtained by the luckless (also displaying significant difference from the neutral group,  $p < 0.05$ ). In the areas of financial and recreational risk there was no significant difference between the luckless and the group of neutral respondents.

In respect of the “perception of risk” sub-scale (the respondent’s assessment of how risky a given behaviour is), a one-way analysis of variance did not reveal significant differences between the groups of lucky, luckless and neutral respondents. In other words, the lucky and the luckless assess the size of risks similarly in a given domain. This means that the greater readiness on the part of the lucky in comparison to the luckless does not result from the fact that the lucky are more dismissive of the threats flowing from engaging in a given risky behaviour.

In order to assess the predictive value of the analyzed variables from the risk area, a simple linear regression analysis was conducted. Eliminated from among the potential predictors were those weakly correlated with the luck variable ( $r$  – Pearson coefficient value between

**Table 2**

**Comparison of mean results for the lucky (N = 137), the luckless (N = 129) and neutral respondents (N = 270) from the domains of: social risk, recreational risk and financial risk (investment sub-scale) on the DOSPERT inventory – risk-taking**

DOSPERT – risk-taking in various domains	Groups defined by the good luck coefficient	M	SD	Significance of difference between groups determined using the Scheffé <i>post hoc</i> test (social and recreational risk) and the Games-Howell test (financial – investment risk)
Social risk	luckless	29.06	6.17	neutral* lucky***
	neutral	30.69	5.35	luckless* lucky***
	lucky	33.07	5.17	luckless*** neutral***
Recreational risk	luckless	24.12	9.04	neutral lucky***
	neutral	25.69	8.02	luckless lucky**
	lucky	28.57	8.04	luckless*** neutral**
Financial risk – investment risk sub-scale	luckless	9.95	3.67	neutral lucky***
	neutral	10.52	4.06	luckless lucky**
	lucky	11.93	4.68	luckless*** neutral**

Bold typeface indicates pairs of groups exhibiting significant differences at a level of:

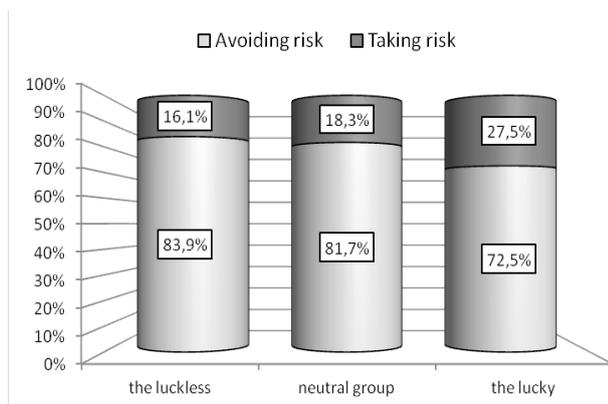
\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

-0.2 and 0.2). As a result, the analysis included two independent variables: perception of risk in instrumental categories (SIRI scale), and engagement in social risk (DOSPERT scale). The model turned out to be well-suited to the data of  $F(2.554) = 18.07$ ;  $p < 0.001$ . Both predictors were significant in allowing for forecasting the dependent variable, however, engagement in social risk has a slightly higher predictive value ( $\beta = 0.17$ ;  $t = 3.93$ ;  $p < 0.001$ ) than does perception of risk in instrumental categories ( $\beta = 0.14$ ;  $t = 3.34$ ;  $p < 0.01$ ).

### Perspective adopted and penchant for risk-taking

To see if differences between the lucky and the luckless in risk-taking are present depending on the three primary factors influencing the perception of a given situation (presentation of the situation in terms of profit and loss, large-small value of profit/loss and low-high probability of success/failure), the original *Risk-taking – various perspectives* instrument was applied. From among the combinations of factors taken into account in the individual questions, in two cases statistically significant differences appeared between the lucky and the luckless. It occurred that the lucky are more inclined to take risks than the luckless in situations where the factors taken into consideration appear in two configurations (variants).

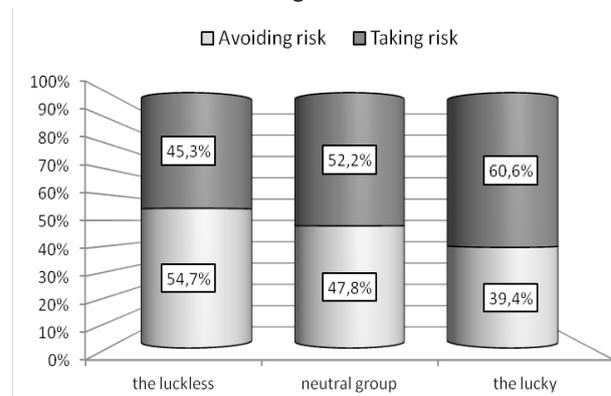
Firstly, the lucky declare a greater readiness to take risks than the luckless when: (a) they are threatened with incurring a loss, (b) the value of the loss they would incur if they made the safe choice (devoid of risk) is relatively large, (c) taking risk may protect them from that loss, even when doing so carries a risk of even greater losses but the probability of this extremely undesirable event occurring is not extreme (10%). The following question addressed this combination of factors: "If for some reason you had to pay a fine, what would you prefer: a) to pay a guaranteed fine of \$100, b) participate in a drawing in which there was a 10% chance of losing \$500 with the alternative of losing nothing?". The results are illustrated in Figure 2.



**Figure 2. Percentage comparison of choices made in particular groups consisting of taking or avoiding risk (Variant 1).**

In this variant, the risky option was chosen by 27.5% of the lucky and only 16.1% of the luckless ( $\chi^2(2, N = 557) = 6.7$ ;  $p < 0.05$ , strength of inter-correlation measured by Cramer's  $V = 0.11$ ;  $p < 0.05$ ).

Secondly, the lucky exhibit a greater readiness to risk than the luckless when: (a) there is a potential for profit, (b) the value that can be gained at the moment the risk is taken is relatively substantial, (c) the risk-taking is associated with the potential to lose a small value which they would definitely gain by taking the safe option, yet the probability of greater profit at the moment the risk is taken is rather large (50%). The following question addressed this combination of factors: "If you were supposed to receive a prize, what would you prefer: a) to receive a guaranteed \$100, b) to participate in a coin toss in which 'heads' means a prize of \$300 and 'tails' results in winning nothing". The results are illustrated in Figure 3.



**Figure 3. Percentage comparison of choices made in particular groups consisting in taking or avoiding risk (Variant 2).**

In the second variant, the decision to take a risk was made by 60.6% of the lucky and 45.3% of the luckless ( $\chi^2(2, N = 557) = 6.6$ ;  $p < 0.05$ ; strength of inter-correlation as measured by Cramer's  $V = 0.11$ ;  $p < 0.05$ ).

In the case of the potential loss (variant 1), it would seem that the lucky take into account to a greater degree the probability of an extremely negative outcome to the event. If it is slight (10%), then 27.5% of them decided to take a risk in order to avoid a loss (pay a \$100 fine), in spite of the even greater cost of failure (a loss of \$500). The same decision was made by only 16.1% of the luckless and 18.3% of the neutral respondents.

In the case of the chance for profit (variant 2), a significantly larger percentage of the lucky (60.6%) than the luckless (45.3%) took the risk, tempted with the promise of greater profit (\$300 in comparison to the guaranteed \$100 by making the safe choice), but only in the variant with a large probability of receiving the greater sum (50% chance). The results recorded indicate that one of the key factors in the lucky taking greater risks than the luckless is the relatively large value that can be gained or lost. The lucky,

however, do not differ from the luckless in the frequency of risk-taking in all the variants involving small losses or profits, independently of the probability with which they may occur. The lucky are also not inclined to take risky decisions more often than the luckless in situations where: a) by taking the risk a large profit may indeed be realized (\$500 compared to a guaranteed \$100 for the safe choice), but the probability of this event is small (10%); b) they face a potential loss of great value (\$100), and by taking the risk they may be able to avoid loss, but also may lose much more (\$300) while the probability of an extremely negative outcome is quite high (50%).

In summary, it may be stated that the lucky are more inclined than the luckless to take risks when “the game is worth the candle”, in other words, when the amounts to be gained or lost are relatively large. The lucky also display a greater tendency than the luckless to take account of the probability that particular outcomes may occur. Thus they more often view risk in terms of probability, which confirms the conditions of the hypothesis assuming higher results for the lucky on the instrumental risk scale.

### General discussion

The starting point for our research was the observation that the experience of good and bad luck often occurs in the context of risk-taking and the perception of risk. Risk is associated with uncertainty as to the results of actions, and with the attendant threat of loss and failure. Uncertainty and the potential for loss are elements tightly linked with the issue of experiencing good and ill fortune. We generally speak of good luck when, on the one hand, there was a quite small probability (lack of certainty) that we would profit (or avoid loss), and on the other that the dimensions of the profit (or of the loss that was successfully avoided) were great. In turn, bad luck is associated with situations in which we failed to win something very valuable or we were hit by a large loss in spite of the high probability that we would win/lose (we had a very strong case for assuming so). The experience of good luck can also be linked with avoiding risk, such as when, in spite of the virtually non-existent chances of incurring loss, we purchase a good insurance policy. In this situation, we look at an unfortunate and highly improbable event in terms of good, rather than bad, luck: “What luck that I was insured!” (especially if we had purchased the insurance at the last minute).

During our study, we focused on the question of whether there are differences in the ways that the lucky and the luckless perceive and engage in risky behaviours, and if there are, of what they consist in. We were also interested in learning if the predicted different approach to risk could be one of the factors in the experience of good or bad luck.

The results of Studenski’s Test of Risky Behaviours confirmed the prediction that the lucky more often take risks than the luckless. Teigen (1995, Teigen et al., 1999) believes that the feeling one has been the beneficiary of good luck in some situation is strongly linked to the possibility of negative outcomes occurring. In other words,

in all situations containing the threat of negative outcomes the potential to experience good luck is present. The feeling that we have got lucky will prove frequent when those negative outcomes are avoided, whether by our own efforts or as a result of external factors independent of our activity. In the light of Teigen et al.’s observations, it should come as no surprise that a greater chance of experiencing good luck is enjoyed by those who more eagerly engage in risky situations presenting the potential for unfavorable results. Counter-factual thinking plays an important role in coming to the conclusion that we have been lucky in a given situation. This was demonstrated in research by Johnson (1986), and Teigen et al. (1999) additionally proved that the phenomenon of counter-factual thinking influences the assessment of our good fortune’s size. The more serious are the negative consequences we could have faced, the greater is the feeling of good luck when they are avoided. Teigen (1998) also demonstrated that interpretation of a given event in terms of good luck is possible even if the result was objectively detrimental (associated with unpleasant consequences). It is enough that the course of events presented the possibility of an even more damaging result. In the light of these observations, it should not surprise anyone that those more eager to take risks have a greater chance of viewing themselves as lucky ones. Experiencing a greater number of risky situations leads to a greater number of results that counter-factual thinking allows us to classify as lucky.

We felt, however, that the mere fact of frequent risk-taking does not guarantee one will experience good luck; it is possible to take ill-advised risks. This gives rise to the question of whether there are differences between the lucky and the luckless in their perception of risk, in the manners and domains in which they assume it.

The results obtained by the SIRI inventory indicate that the lucky display a greater tendency than the luckless and neutral respondents to view risk in instrumental terms. This result confirms the assumption that the lucky increase their chances to succeed as a result of their perceiving risky situations in terms of the potential for success or failure. The lucky, more frequently than the luckless, can also focus on estimating the dimensions of potential profits and losses. This “calculating” approach to risk optimizes the potential for success, and may also make it easier for the lucky to notice and avoid particularly dangerous situations – if the initial calculation shows that failure in a given situation will result in excessive losses. The SIRI inventory also allows for the conclusion that the lucky have a greater tendency than the luckless to seek sources of pleasant stimulation in risky situations. Thus the lucky are also more ready to risk in those domains in which the main benefit will be a “shot of adrenaline”. Differences in this area between the lucky and the luckless may result from differences in personality. Of particular significance may be the large differences between the groups in levels of neuroticism and extraversion; the lucky are more extroverted and are characterized by a lower level of neuroticism than the luckless (see Kolemba, in print). Studenski (2004), in turn, demonstrated that propensity for risk is positively correlated with extraversion, and negatively

with neuroticism. It was also stated that individuals who eagerly engage in sports associated with significant risk are characterized by a relatively high level of emotional stability and extraversion (Kajtna, Tušak, Bariš & Burnik, 2004). Because this arrangement of characteristics is typical of the lucky, and also strongly differentiates them from the neurotic and clearly less-extroverted luckless (see Kolemba, in print), it is reflected in their greater view risk in terms of sources of pleasant stimulation.

The results gathered using the DOSPERT inventory demonstrated significant differences between the studied groups in terms of engaging in risky behaviours in selected life domains; the lucky achieved significantly higher coefficients in respect of social, investment and recreational risk. It turns out that the lucky are far more eager to take risk in the social sphere than both the luckless and neutral respondents. The luckless are less inclined to take risks in this area than are not only the lucky, but also the neutral. Penchant for risk in the social domain is determined by readiness to enter an unknown social environment (change in hometown, workplace, etc.), penchant for making new acquaintances (assuming the risk of rejection), and the tendency to select more satisfying but also riskier career paths. This confirms the suspicion that the lucky may have greater ease in constructing their social network, and likely draw more “profits” from it. This allows them to receive valuable information or support in accomplishing tasks with greater frequency. Additionally, greater acceptance by the lucky of risk in this area may enable them to better deal with taking decisions linked with changes in their social environment, influencing their career prospects or involving relations with friends and loved ones. The luckless are more conservative in this domain, which may lead to a smaller number of chances taken, such as starting a better job or meeting a new, interesting person.

The lucky also demonstrate a greater penchant for taking financial risk of an investment nature. We already know that the lucky more frequently process risky situations in categories of probability. They more readily estimate the probability of success and failure, assess the dimensions of potential profits and scope of possible losses. This manner of evaluating risky situations in respect of taking investment risk should increase their chances of success (investment in a new enterprise or various sorts of financial instruments). The results received in this area are difficult to interpret. Perhaps the lucky are better investors, as a result of which they invest more readily than the luckless and the neutral because they receive more positive reinforcements. It is also possible that their tendencies to calculate risk, assess the probability of success and estimate the dimensions of potential profit and loss prefer such domains in which it is easier to estimate risk by putting it into numerical terms. The lucky are disposed to accept a higher level of risk not only when they have defined aims, but also when they want to satisfy their need for “intense” impressions; this is attested to by their higher results in respect of recreational risk. Risk in this domain is linked with exceeding the boundaries of safety during sporting activity, eagerness to engage in extreme sports and penchant for seeking situations in which

it is possible to experience a “shot of adrenaline”. This result is consistent with those generated by the SIRI inventory in respect of understanding risk through the prism of positive stimulation.

Regression analysis confirmed the predictive value of undertaking risk in the social domain and perception of risk in instrumental categories. This means that the experience of good fortune is greater when there is a greater tendency to take risk in the area of social contacts, and when the motives for doing so are more instrumental. We hasten to remind the reader that, although the lucky more often engage in risky behaviour, in no way do they differ from the luckless in terms of perception of the size of a risk; in other words, they give similar answers to the question of how risky a given behaviour is. It may be concluded that these behaviours do not result from taking threats lightly. This confirms earlier observations concerning how the lucky take “calculated” risks.

Kahneman and Tversky’s prospect theory describes and explains how choices are made in conditions of risk. It details inter alia the specifics of perceiving probabilities when taking decisions, and differing approaches to risk in the case of loss and profit. Firstly, people over-estimate small probabilities (possibility effect) and under-estimate average and high ones (certainty effect). Secondly, they are inclined to risk more when faced with potential loss than the opportunity to profit. One of the aims of our research was to see if the lucky and the luckless differ in respect of their penchant for taking risk depending on the adopted perspective (presenting a situation in terms of the chance for profit or danger of loss; a large or small probability of success/failure; the size of the potential profit/loss). Our study’s results have shown that there are two variants in which the lucky are inclined to take risks much more often than the luckless. In both of them, a relatively large value to be gained or lost is present. The first variant concerns the danger of loss, and the loss incurred when the risk-free behaviour is chosen is relatively large (\$100). The choice of a risky behaviour presents the chance to avoid the loss, but also carries the danger of a five-fold greater loss (\$500). An important element in this variant is the low probability of a detrimental result’s occurrence (10%). In this variant the risky choice was made by 27.5% of the lucky and 16.1% of the luckless. As can be seen, the majority of study respondents did not undertake the risk of avoiding a guaranteed loss, which would seem to be a rational choice when considering that doing so was faced with a five-fold greater loss (\$500 could be lost instead of \$100). On the other hand, the possibility of success was high (90% chance of avoiding the loss). The luckless’ significantly lower readiness to take risk in this variant may mean that they yield to the certainty effect more often than do the lucky, meaning that they assign lesser significance to nearly-certain outcomes (in this case a 90% chance of success meaning the avoidance of loss) than would result from statistical probability.

In the second variant, in which the lucky were more often prepared to incur risk than the luckless, in order to achieve a potential large profit (\$300) it is necessary to

select a behaviour bearing the risk of losing a guaranteed \$100. The probabilities of achieving success or failure are equal (50%). In this version, 60.6% of the lucky and 45.3% of the luckless selected the risky option. Such a result may indicate that the lucky are less susceptible to what prospect theory describes as the penchant for avoiding risk when there is a potential for profit, especially when significantly more can be gained than lost and the potential for success is great.

The results of our study allow for the presumption that differences in perceiving and engaging in risky behaviours may, on the one hand, explain why people are predisposed to interpreting events in terms of good and bad luck (e.g. owing to counter-factual thinking). On the other hand, these differences (in approaches to risk) seem to be among the factors that in fact cause people to experience with greater or lesser frequency lucky or unlucky events and outcomes.

More frequent risk-taking in the social and investment domains, primarily well-calculated instrumental risk that serves the accomplishment of goals, increases the chances events will occur that may be interpreted in terms of success. Taking a reasonable risk in these areas may lead to meeting the love of one's life, a better job, a profitable investment or last-minute withdrawal of funds before a risky investment leads to loss. Because counter-factual thinking seems to be the primary factor in developing a self-image as a lucky or luckless individual, it would be worth conducting additional research on this phenomenon. Interesting conclusions may be drawn from answers to questions about situations in which counter-factual thinking is engaged in by the lucky and the luckless, as well as how counter-factual thinking influences their behaviour and motivation for further activity. For example, if the lucky interpret a given event as a case of bad luck ("It could have been a lot better"), do they immediately concentrate their thoughts on seeking the reasons why things happened as they did and what they could do in similar future situations to produce a different result? Additional information on counter-factual thinking by the lucky and the luckless and on risk-taking styles can enhance our knowledge of how and why some people become luckless, while others have good reasons for counting themselves among those whom the fates have smiled upon.

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**APPENDIX****Good Luck/Bad Luck Inventory****Positions on the good luck scale**

1. Chance events usually go in my favor
2. I win lotteries and competitions more often than others
3. I often encounter people who help me in some way
4. I often experience positive coincidences
5. Luck is often on my side in achieving my goals and dreams

**Positions on the bad luck scale**

1. Bad luck often prevents me from achieving my goals and dreams
2. The acquaintances I make generally turn out to be unlucky
3. In my life it usually happens that in any given moment, when something can break or complicate my life in some way, it happens
4. Chance events usually go against me
5. I often have accidents that are not my fault