

Propensity towards risk: one or many?

Tadeusz Tyszka¹

Centre for Market Psychology of Leon Kozminski Academy of Entrepreneurship and
Management

Artur Domurat²

Faculty of Psychology, Warsaw University

¹ Correspondence address: Jagiellońska 59, PL 03-301 Warszawa, Poland. Tel. +48 22 5192189; Fax +48 22 8112022 E-mail: tt@psychpan.waw.pl

² Correspondence address: Stawki 5/7, PL 00-183 Warszawa, Poland. Tel. +48 22 5192189; Fax +48 22 8112022. E-mail: artek@wspiz.edu.pl

Abstract

In the present research we investigate actual behavior in risky situations in different domains – investments, gambling, insurance, medical checkups, etc. The purpose of the study was to determine whether the individual's propensity to engage in risky activities depends on the domain or not. A questionnaire about risky types of behavior in several domains was administered to 826 people. The results of factor analyses revealed that four uncorrelated types of risk can be distinguished, associated with four values: health, money, prestige, security. Thus, we should speak of not one but many risk propensities. The distinction of four instead of one risk propensity was also supported by other findings of the study. For example, we compared those more vs. less active in investments and found that the more active were more risk prone in financial risk. Yet, at the same time they tended to be less risk prone in insurance behavior (security risk) than the other group.

Keywords: risk propensity, risk taking.

1. INTRODUCTION

The main question of this paper is whether the individual's propensity to engage in risky activities depends on the domain or not. Another question concerns the relationship between demographic and cultural variables and the propensity (or propensities) to take up different types of risky behavior.

Two extreme approaches can be observed in the research on risk taking. They differ in how they treat individual predisposition and situational factors in risk taking (cf. Bromiley and Curley, 1992). The characteristic of one of these approaches (which is widely accepted in the decision making research) is to ignore individual differences and focus on situational factors differentiating typical behavior in given situations. The characteristic of the other approach (which is widely accepted in individual differences research) is to consider risk taking as a general personality disposition. It is presumed here that risky behavior can be generalized across situations and any differences observed between individuals can be accounted for by individual traits. As Bromiley and Curley (1992) point out, various combinations of the two approaches also exist. For example, the *within-situation approach*, which investigates how people with different characteristics behave in a particular situation, e.g., how such characteristics as gender, age, extraversion, etc, can influence investment decisions; or the *within-trait approach*, which investigates how people characterized by a particular trait, say extraversion, behave in different situations.

Regardless of the approach adopted there arises an important question of the measures of risk attitudes. There is a variety of such measures. Therefore, a crucial question is an internal agreement among different categories of risk taking measures. Perhaps the first study designed to test the agreement between measures of risk taking was undertaken by Slovic (1962). He used many various tasks (including lottery tasks, but also speed vs. accuracy task,

etc.). The correlations between the measures were either close to zero or, in the few cases when they were positive, were very low.

Later, MacCrimmon and Wehrung (1986) carried out a study in which they adapted several measures of risk attitudes on top-level business executives. They included measures derived either from behavior in hypothetical lottery situations, from behavior in naturally-occurring risky situations, or from self-reported attitudes towards taking risks. The authors found that the majority of their measures were completely non-correlated. Some which were correlated had very weak relationships.

Similarly, Warneryd (1996) tested whether risk attitudes elicited from hypothetical lottery choices could predict risky behavior in naturally occurring risky situations: (i) the riskiness of portfolios of assets and (ii) actual playing in lotteries. He found that the hypothetical risky choices had a weak relationship with actual playing in lotteries, and no relationship with the riskiness of investment portfolios.

These and similar pieces of research suggest that the attitude of the individual towards risk is not a simple notion. This ambiguity of the notion leads to various inconsistent findings. For example, although in the very definition of entrepreneurship risk taking takes a central position, and the entrepreneurs consistently engage in risky activities, the research on risk propensity of entrepreneurs shows that risk liking is not a distinctive characteristic of these people (Buseniz, 1999; Brockhaus, 1980).

When reviewing the research on attitudes toward risk, at least the following four categories of risk attitude measures can be distinguished:

- normative beliefs about taking risks (one's beliefs whether one should or should not take risks) – e.g. Przybyszewski, Tyszka, Ulatowska, Spence (manuscript) asked people to evaluate proverbs encouraging and discouraging from risk taking;

- self-reported attitudes towards taking risks (I like/ I don't like taking risk) – e.g. Jackson, Hourany, and Vidmar (1972), MacCrimmon and Wehrung (1986);
- behavior in lottery or other hypothetical risky situations (a person declares what he/she would do in a given situation – e.g. Kogan and Wallach (1964) constructed a special choice dilemma questionnaire where individuals are asked to indicate probabilities acceptable for taking part in a given lottery;
- behavior in naturally occurring risky situations (a person takes or does not take part in risky activities) - e.g. Cohen (1960); Warneryd (1996).

Most probably some of these measures are to some extent correlated. For example, one might think that normative beliefs about taking risks and self-reported attitudes towards taking risks should be positively correlated. However, as found in the research quoted above, most of these measures are correlated either very weakly or are not correlated at all. For example, rating oneself as a risk taker need not be reflected in risky behavior, and vice versa, a person who engages in extremely risky behavior may consider himself or herself to be a risk avoider. For example, Keyes (1985) quotes the following statement by a wirewalker, i.e. a person who does a job that is commonly perceived as extremely risky, *You can't be both a risk taker and a wire walker. I take absolutely no risk.* As this quotation shows, the objective and subjective meanings of risk can be quite dissimilar.

Moreover, when we limit ourselves to the objective meaning of risk and to behavior in naturally occurring risky situations, there is still a question of whether the risk propensity is relatively constant or whether it differs across the fields of one's behavior. For example, an entrepreneur can be a risk taker in the domain of business and at the same time he/she can avoid risk in other domains, such as health or social relationships. Indeed, Keyes (1985) analyzing cases of individuals whose jobs are commonly regarded as requiring risk taking,

e.g. gamblers, a wire-walker, entrepreneurs, etc., concluded that these people did not manifest a generalized cross-situational propensity to risk taking.

However, there has not been much research that compare risk taking in different domains. When there are any, the categories of risk are imposed rather than extracted from subjects. An example is the study by Jackson, Hourany, and Vidmar (1972). The authors determined *a priori* that the concept of *risk taking* consists of at least four dimensions: (i) monetary, (ii) physical, (iii) social, and (iv) ethical. Using different kinds of self-reported attitudes towards risks taking and different measures of hypothetical behavior in risky situations, the authors confirmed the four-dimensional model of risk propensity they proposed. Factor analysis revealed a four-factor structure that corresponded to the four domains distinguished.

In the present exploratory research we concentrate on the actual behavior of people in risky situations. Our intention is to consider the widest possible range of behavior instances that might involve some kind of risk. In this way we want to extract the categories of risk from subjects rather than impose them. Here is the set of questions we wanted to be answered in the two exploratory studies.

- Does the individual's propensity to engage in (real) risky activities depend on the domain or not?
- If it turned out that the individual's risk propensity depended on the domain, we wanted to know what these dimensions of risk are, i.e. which risky activities go together.
- What is the relationship between risk propensity (or risk propensities) and self-reported normative beliefs?
- What is the relationship between risk propensity (or risk propensities) and important demographic variables, especially income, gender, etc.?

- What is the influence of cross-cultural differences on the propensity (propensities) to take up risky behavior?

2. METHOD

2.1. Questionnaire

In our study we focused on real behavior in risk situations. Therefore we constructed a questionnaire that consisted of 64 questions (see Appendix 1):

- a) questions concerning risky behavior in different domains, such as insurance decisions, investments, lifestyle habits concerning health, driving a car, social relationships, illegal activities, consumer behavior and gambling. All these questions required only yes/no answers.
- b) questions on savings (having different types of deposits);
- c) questions on demographic data (age, gender, occupation, income, etc.);
- d) scales for estimation of the acceptance of proverbs encouraging cautious and/or risky behavior, [-3 ; +3];
- e) a declaration of the preferred form of payment for the participation in the study: a sure payment or a lottery (depending on the result of a dice throw a participant was given a larger amount of money or nothing).

2.2. Participants

A total of 826 Polish subjects were given the questionnaire. In all 417 of them were the research target group of 37-43-year-old inhabitants of Warsaw (176 male, 241 female). The other 409 participants were adults who were not monitored with respect to age and place of residence – they were not paid for participating in the study and were included in the sample in order to obtain a more stable sample for the factor analysis of the questionnaire answers.

Finally, 100 Greek respondents filled out the same questionnaire translated into Greek. They were from the same age range as the Polish target group: 37-43 years old and split roughly equally into male and female.

3. RESULTS

3.1. Risk propensity: one or many?

Factor analysis was performed on 47 items representing different activities concerning risk-taking, using the data from 826 Polish respondents. (In the factor analysis the activities related to real estate insurance and driving habits, i.e. instances of behavior that concerned only a part of the sample, were omitted).

Exploratory factor analysis with OBLIMIN rotation revealed four factors (Cattell's scree-test). We removed 16 from the initial 47 items that (i) were ambiguous or (ii) had low loadings in all factors. Thus, the final factor analysis was made on the 31 best-fitting items. It revealed four factors, practically uncorrelated (the highest correlation was $r = -0,152$). This factor structure accounted for 29,1% of the total variance. As can be seen from Fig.1 and Table 1, Factor One (i) does not dominate others and (ii) does not have high factor loadings in all or the majority of variables. Moreover, the second order factor analysis did not yield a single underlying dimension of generalized risk taking. This strongly suggests accepting not a one- but a multi-dimensional risk taking structure.

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We interpret the four-factor solution as four propensities for risk taking in the following domains:

- a) Factor 1: behavior examples from the health area – we call it health risk (HR);
- b) Factor 2: behavior instances from the social relationships domain – we call it social risk (SR);
- c) Factor 3: acts of behavior with financial consequences (mainly behavior in the investing and gambling domain) – we call it financial risk (FR);
- d) Factor 4: actions taken for protecting one from potential undesirable consequences in the future (e.g. buying insurance policies, reserving tickets, etc.) – we call it anticipatory risk (AR).

We performed the confirmatory factor analysis to define the reliability of the four risk-taking scales. It turned out that all items were significant in the scales they were assigned to. The Cronbach's alphas range from 0.496 to 0.635 when calculated with Pearson's r or from 0,604-0,809 when calculated with tetrachoric r . Thus, they were reasonably high – not high enough for individual diagnosis, but perhaps high enough for inter-group comparison.

3.2. The choice of the forms of payment and propensity towards risky behavior in the four domains

After completing the questionnaire the participant was asked to choose between two forms (sure and risky) of payment for participating in the study. We compared the two groups of participants – those preferring sure payment (gain) vs. those who chose a lottery – with respect to their actual behavior in the four domains. The only significant difference between average scores of the two groups was that of the financial risk propensity scale (see table 2) while no differences in other kinds of risk were observed.

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3.3. Saving activity and risk propensity in the four domains

Our questionnaire included five questions concerning savings (possessing different forms of bank accounts). In accordance with this we constructed a scale of saving activity and dichotomized it by the average: those who scored below the average - less active in saving, and those who scored above the average – more active in saving. As Table 3 shows, saving activity plays no substantial role in health and social risk taking. However, people who were more active in saving were more likely to take financial risk (higher scores on FR scale) but at the same time, they were also more prone to protect themselves against risk (lower scores on AR scale) than those who were less active in saving.

This result constitutes a strong argument that risk propensity may vary dramatically in different domains of risk taking. Here, financial and anticipatory risk propensities even have opposite directions in the groups compared.

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3.4. Risky behavior while driving a car and risk propensity in the four domains

Five questions in the questionnaire addressed drivers only (287 subjects) and concerned their risky behavior while driving a car (e.g. overtaking where it is not allowed, speeding, driving through a red light, drunk-driving). Together they formed a very consistent (Cronbach's $\alpha=0,947$) driving habits scale. Having dichotomized subjects' scores by the average we divided the drivers into two groups: "the cautious" and "the risk-takers".

As Table 3 shows, risk-taking drivers differ from the cautious ones in risk taking in all the domains except the social domain. The cautious drivers take risks less in all these domains than the risky drivers.

3.5. Real estate insuring and risk propensity in the four domains

Five questions in the questionnaire were addressed to real estate owners (387 subjects) only and concerned having (or not) insurance against different damages and losses to their houses and/or apartments (e.g. fire, flood, burglary, etc.). They formed together a very consistent (Cronbach's $\alpha=0,879$) scale of attitude towards insurance. Having dichotomized subjects' scores by the average we divided the owners into two groups: "prone to insuring" vs. "avoiding insuring".

As expected, those "prone to insuring" were less likely to take anticipatory and health risks than those "avoiding insuring". However, there was no difference between the two groups in the domains of social and financial risks.

3.6. Normative beliefs and risk taking in the four domains

In order to assess the individual's normative attitude towards risk, we constructed an aggregated index of the evaluation of the accuracy of proverbs encouraging and discouraging risk taking. This was the average evaluation of proverbs encouraging risk-taking minus the average evaluation of proverbs discouraging from risk-taking. We then divided the participants into two groups using the index: those who had scored below zero, i.e. declaring a preference for cautiousness vs. those who had scored over zero, i.e. declaring a preference for riskiness.

The results show (see Tab. 4) that those declaring a preference for cautiousness actually tend to take less risk in the social and financial domain than those who declare a preference for risk taking. However, these two groups do not differ in actual risk taking in the domains of health and anticipatory behavior.

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3.7. Incomes and the four risk propensities

We divided subjects into three groups with regard to their own perceived income:

- a) those who evaluated their household income as lower than average,
- b) those who evaluated their household income as more or less equal to average,
- c) those who evaluated their household income as higher than average.

One-way ANOVA revealed that the higher the income, the higher the actual financial and social risk taking. However, these income groups do not differ in actual risk taking in domains of health and anticipatory behavior (see Fig. 2).

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Insert Fig. 2 about here

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3.8. Gender and the four risk propensities

There is a common belief that men are more inclined to take risks than women (Byrnes, Miller and Schafer,1999). As shown in Table 5, men take risks more often than women in all analyzed domains. Thus, the stereotype seems to be right in this case.

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3.9. Cross-cultural differences

Since the Greek sample was small, no separate factor analysis was performed for this group. Only a comparison was made of the risk attitudes in the Polish and the Greek group in the four scales of risky behavior distinguished in the Polish sample. As can be seen in Table 6, statistically significant differences between the Poles and the Greeks can be observed in three (out of four) risky domains. The differences concern health risk, where the Poles evidently act more riskily. On the other hand, in the area of social behavior the Greeks tend to indicate

more risky behavior. Similarly, the Greeks tend to take more anticipatory risk than the Poles. In contrast to these three areas, no difference between the two nationalities was found in attitudes towards financial risk.

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Similarly to attitudes towards financial risk, no significant difference between the two nationalities was found in the preference for the form (sure vs. risky) of payment for participating in the study. 62% of Polish participants and 53% of Greek participants chose the lottery.

4. DISCUSSION

Our research shows that there should be no doubt that **the attitude of an individual towards risk depends on the domain.** Investigating the behavior of people in different domains we have obtained four independent dimensions of risk. Moreover, we found many meaningful differences in attitudes towards risk in particular domains between groups of people with various behavioral characteristics. For example, it was found that activity in the domain of saving influences financial and anticipatory risk taking. People who were more active in the savings domain tended to take more financial risk (higher scores on the FR scale). However, at the same time they tended to protect themselves against risk (lower scores on the AR scale). This result clearly demonstrates that people’s risk attitudes can be different in different domains. It can even be reversed, as in the case of financial and anticipatory risk.

Similarly, as can be expected, people who do not insure their homes or houses scored higher on the anticipatory risk scale (also on health risk) than people who do insure their homes. On the other hand, these groups do not differ in their tendency to take social or

financial risks. In the same way, we found a relationship between the score on the financial risk scale and the choice of the way of payment for the participation in the study (a sure amount of money or a lottery). However, no relationship existed between the scores on the other risk scales and the choice of the way of payment. (As expected, the choice between a sure gain and a lottery belongs to the domain of financial risk). All these relationships support the claim that there is not one but many attitudes towards risk, depending on the domain of risk.

As far as the factor structure of risk is concerned, we consider the structure obtained in the present study as only a preliminary result. There is no certainty that the structure obtained in the present study (financial, social, financial and anticipatory risks) will replicate for other sets of behavior instances and other groups of subjects. It is interesting to notice that three of the four dimensions obtained in present study are consistent with the dimensions obtained in the study by Jackson, Hourany, and Vidmar (1972). Their fourth dimension – ethical risk – did not emerge in our study (the relevant items entered the financial risk dimension). Instead, we came up with the anticipatory risk, which did not appear in the other study – probably because the relevant category of behavior examples was not presented in the research. Certainly, the question of the factor structure of risk of requires further research. It is worth of noticing that the four risk dimensions elicited in our study correspond to four fundamental human values: health, money, social values and security.

In our research we observed considerable differences in the risky behavior of Greeks and Poles. The differences concern all domains but financial risk. We believe it is so because in these other domains there are various environmental and cultural differences between the two societies. At least some of the differences observed can be well explained environmentally. For example, far more Poles than Greeks admitted that they do not check the expiry date of food products, and similarly for eating fruit without washing it first. Where do

these differences come from? Undoubtedly, we should consider the fact that people who live in southern regions are at a greater risk of food-borne diseases (because of the hot climate). In this situation the Greeks are surely more aware of the risk of such diseases than the Poles. As a consequence, this feeling of greater health hazard leads to more frequent checking if a particular product that one buys is still suitable for eating. Results like these evidently confirm that risk attitudes can be determined environmentally.

When talking about different behavior in respect to risk between the Poles and the Greeks, we have to bear in mind a possibility of different perception of certain risks in the two groups. The problem of differentiated perception of risky behavior was noted by Slovic (1964). Naturally, we do not know whether these differences are a result of different attitudes or different perception of risk. In other words, when people take a certain level of risk, does the difference in behavior result from the fact that for some people this behavior seems less risky than for others, or does the difference result from the fact that people perceive the same level of riskiness, but some take the risk and others do not. The possibility of the latter case was long ago demonstrated by Cohen, Dearnaley & Hansel (1958), who found that alcohol increased the willingness to take risk by their respondents (bus drivers), but it had no effect on the verbal estimates of risk.

People who declare a tendency to accept recommendations of caution indeed take fewer social and financial risks than people who declare a tendency to accept a recommendation of risk taking. However, the people who declare a tendency to accept the recommendations of caution or risk taking do not differ significantly in respect of taking risks in the health or anticipatory behavior. This can suggest that people perceive proverbs as applicable mostly to financial risk and social risk, and less to health risk and to anticipatory risk. Indeed, in the study by Weber, Hsee and Sokolowska (1998) in which proverbs of three countries (American, German and Chinese) were rated with respect to their applicability to

financial risk and to social risk, the authors found that these proverbs were rated as highly applicable to financial risk, and less so to social risk. Unfortunately, the authors did not require rating the proverbs with regard to applicability to health risk and to anticipatory risk. We can only guess that the applicability of these proverbs to these risks would be smaller.

Our research also shed some light on the question of how people of different income and gender behave in different situations. We found a positive relationship between the (perceived) level of one's own wealth and financial risk. This finding is somewhat parallel to the finding by MacCrimmon and Wehrung (1986) that the wealthier and higher income executives tended to greater risk taking (in a hypothetical investment of one's personal wealth, actual holding of one's personal assets, as well as in the self-rating of one's willingness to take business risks). Both findings can be interpreted in two ways: either that a person gets wealthier by taking risks or that financial success allows a person to take higher levels of risk.

Concerning gender differences in risk propensity, there is a stereotype that men tend to accept more risk than women. Is this claim justified? It turns out that it is. Our research suggests that men take risks more often in all of the four domains investigated. This result is in agreement with the results of meta-analysis on gender differences in risk taking conducted by Byrnes, Miller and Schafer (1999). Research using different risk domains and different measures of risk attitudes generally indicated greater risk taking in male than female participants.

5. APPENDIX

Questionnaire

1. Have you bought an insurance policy against damage to your house resulting from:
 - a) fire,

- b) flood,
 - c) bounce of ground or landslide,
 - d) weather events (hail, frost, etc.),
 - e) burglaries or thefts?
2. Do you hold a motor policy?
 3. Do you have a life insurance policy in any form (term insurance, whole life insurance, and/or endowment insurance)?
 4. Do you have a casualty insurance policy?
 5. Do you have a policy for your children?
 6. Have you bought an insurance policy for valuable objects other than a property or a car during the last few years (or now)?
 7. Do you hold a third-party policy (e.g. covering unintentionally inflicting damage on third parties and other than the obligatory motor third party liability)?
 8. Do you possess (or have you possessed in recent years):
 - a) foreign exchange deposits?
 - b) deposits in Polish zloty?
 - c) long term deposits (for a period of over 12 months)?
 - d) short term deposits (for a period of 12 months or shorter)?
 - e) a current account?
 - f) state, council or other kind of bonds?
 - g) shares listed on stock-exchange?
 - h) shares not quoted on stock-exchange
 - i) units of investment funds (eg. *Pioneer*, *Eurofundusz*, *Korona*)?
 9. Have you ever invested your savings in gold or other precious metals, coins, precious stones, jewelry, antiques, etc. (in order to maintain your savings, not for use)?

10. Have you ever purchased a property (a house, a flat, a building plot) in order to accumulate and maintain your savings (not for satisfying your housing needs)?
11. Have you ever invested your capital in an economic venture directly (e.g. private loan, own business, etc.)?
12. Do you apply any methods of protection against common injuries while doing the housework, i.e. against cutting your fingers, getting an electric shock, other accidents while doing DIY work, mending things on your own, working in the kitchen, etc.?
13. Do you always follow doctor's advice when you are ill, i.e. lie in bed, take drugs at fixed times, keep to an appropriate diet, etc.?
14. Do you regularly go to the doctor for a check-up (general or in some health area)?
15. Do you take precautions against catching a cold (e.g. staying at home or flu vaccinations)?
16. Do you always pay attention to washing fruits and vegetables before eating?
17. Do you always check the expiry date of food products while buying or consuming them?
18. Are you in the habit of planning your diet for the sake of health (not eating the foods that you have at hand)?
19. Have you over the last few years neglected to see a doctor when your health has been deteriorating?
20. Do you tend not to belt up in the car or to ride a motorcycle with no crash helmet from time to time?
21. Have you ever jumped a light at a crossroads when driving a car, e.g. at night?
22. Have you ever driven back home after having drunk an amount of alcohol violating traffic regulations?
23. Are you in the habit of driving on common roads (i.e. not on speedways or freeways) with a speed exceeding the permitted 60 km/h in a built-up area and 90 km/h outside built-up areas?

24. Do you, if ever, neglect the road signs forbidding overtaking?
25. Do you, if ever, cut corner while turning left?
26. Do you ever cross the street (or the road) in the way not permitted by the traffic regulations (outside a zebra crossing, at red light, etc.)?
27. Do you avoid going to parties where you know nobody?
28. Do you usually dress according to the customs accepted by your community?
29. Do you avoid speaking in front of a large audience?
30. Do you always express opinions different from others' on political issues?
31. Do you always express opinions different from others' on religious issues?
32. Have you ever signed a petition or a protest that you didn't quite agree with?
33. Do you always express opinions different from others' on punishment for criminal acts?
34. Do you avoid talking about sex in mixed company?
35. Have you fare-dodged in past two years (public transportation, e.g. a tram, a bus, a train)?
36. It is commonly known and described in the newspapers that many taxpayers don't declare their whole income to be taxed. Have you concealed any part of your income from Internal Revenue Service in your tax declaration in past five years?
37. It is commonly known and described in the newspapers that many taxpayers use unjustified tax allowances. Have you used a tax relief that you were not entitled to in past five years?
38. It is commonly known and described in the newspapers that many people in Poland are forced to offer a bribe and really give bribes. Have you bribed anybody in past five years?
39. Do you always try to buy products of famous brands?
40. Do you always look for high quality service guarantees (licenses, authorizations, certificates, known brand) when you are a customer of various (tourist, educational, building, etc.) service providers?

41. Do you avoid buying tickets at the last moment before departure for a longer journey?
42. Have you ever bought home electronics (e.g. TV, stereo, personal computer) or household goods (a vacuum cleaner, a blender, etc.) without checking whether it works?
43. Have you ever guaranteed a loan for a person you know?
44. Do you always care about having money 'just in case'?
45. Have you ever bought clothes or tools in bazaars?
46. Do you usually have a first-aid kit packed in your baggage while taking a longer trip?
47. Do you buy lottery tickets?
48. Do you play lot games (Lotto, the pools, etc.) once a month at least?
49. Have you gambled in a casino in the past few years (roulette, bingo, card games: poker, others)?
50. Have you gambled on cards for money in the past few years (common games outside the casino: poker, bridge, hearts, others)?
51. Do you ever bet at races (gamble on horses, motorcycles and cars), boxing matches, football matches etc. in the licensed offices (e.g. at stadiums)?
52. Do you bet small amounts of money or petty things (e.g., a bottle of wine or beer, a bar of chocolate, etc.) with people you know (e.g. work mates)?

6. REFERENCES

- Bromiley, P., & Curley, S.P. (1992). Individual differences in risk taking. In: J.F. Yates (ed.), *Risk-Taking Behavior*. New York: John Wiley & Sons.
- Brockhaus, H.R. (1980). Risk taking propensity of entrepreneurs. *Academy of Management Journal*, 23, 509-520.
- Busenitz, L.W. (1999). Entrepreneurial risk and strategic decision making. *Journal of Applied Behavioral Science*, 35, 325-341.

- Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender Differences in Risk Taking: A Meta-analysis, *Psychological Bulletin*, 125, 367-383.
- Cohen, J. (1960). *Chance, Skill, Luck*. Hammandsworth, UK: Penguin Books.
- Cohen, J., Dearnaley, E.J., Hansel, C.E.M. (1958). The risk taken in driving under the influence of alcohol. *British Medical Journal*, 1, 1438-42.
- Jackson, D.N., Hourany, L., & Vidmar, N.J. (1972). A four-dimensional interpretation of risk-taking. *Journal of Personality* 40, 483-501.
- Keyes, R. (1985). *Chancing it: Why we take risks*. Boston, MA: Little, Brown and Company.
- Kogan, N., & Wallach, M.A. (1964). *Risk taking: A study in cognition and personality*. New York: Holt, Rinehart and Winston.
- MacCrimmon, K.R, & Wehrung, D.A. (1986). *Taking Risk: The Management of Uncertainty*. New York: Free Press.
- Przybyszewski, K., Tyszka, T., Ulatowska, H., & Spence, K. (manuscript). Proverbs as recommendations about risk taking.
- Slovic, P. (1962). Convergent validation of risk taking measures. *Journal of Abnormal and Social Psychology*, 65, 68-71.
- Slovic, P. (1964). Assessment of risk-taking behavior. *Psychological Bulletin*, 61, 220-233.
- Warneryd, K.E. (1996). Risk attitudes and risky behavior. *Journal of Economic Psychology*, 17, 749-770.
- Weber, E. U., Hsee, C. K., & Sokolowska, J. (1998). What folklore tells us about risk and risk taking: Cross-cultural comparisons of American, Chinese and German proverbs. *Organizational Behavior and Human Decision Processes*, 75, 170-185.

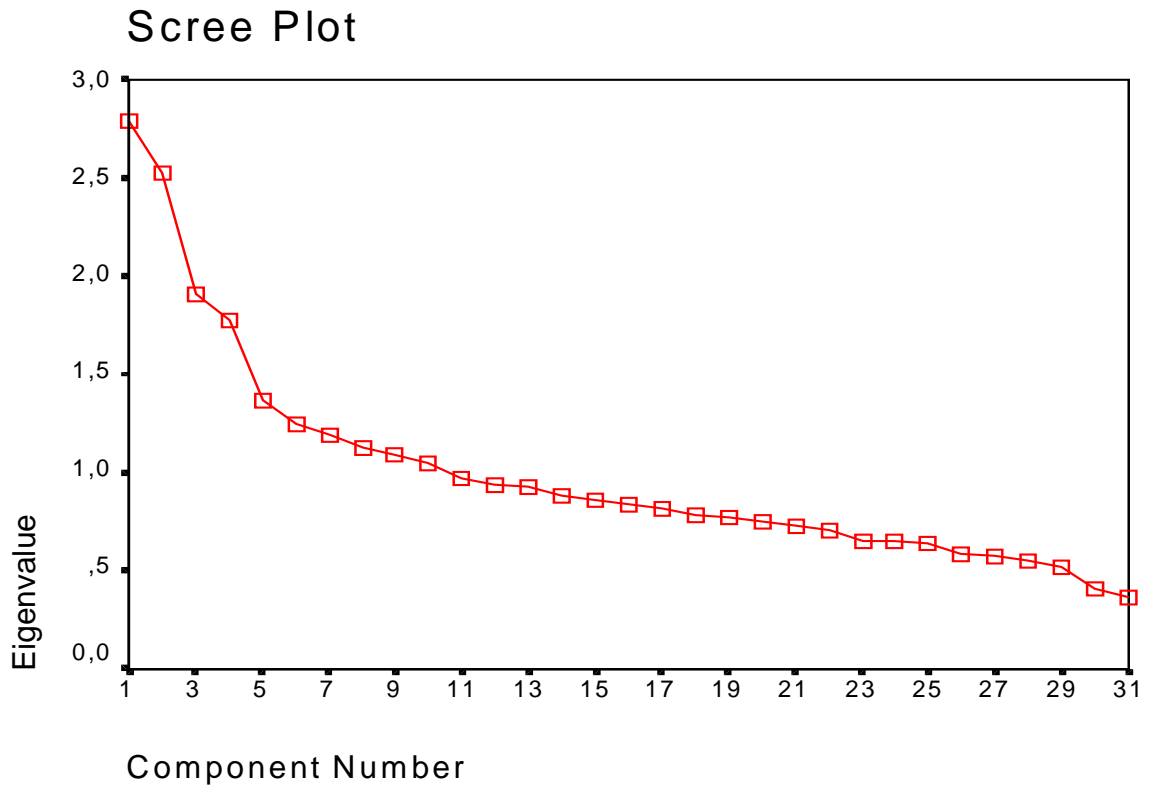
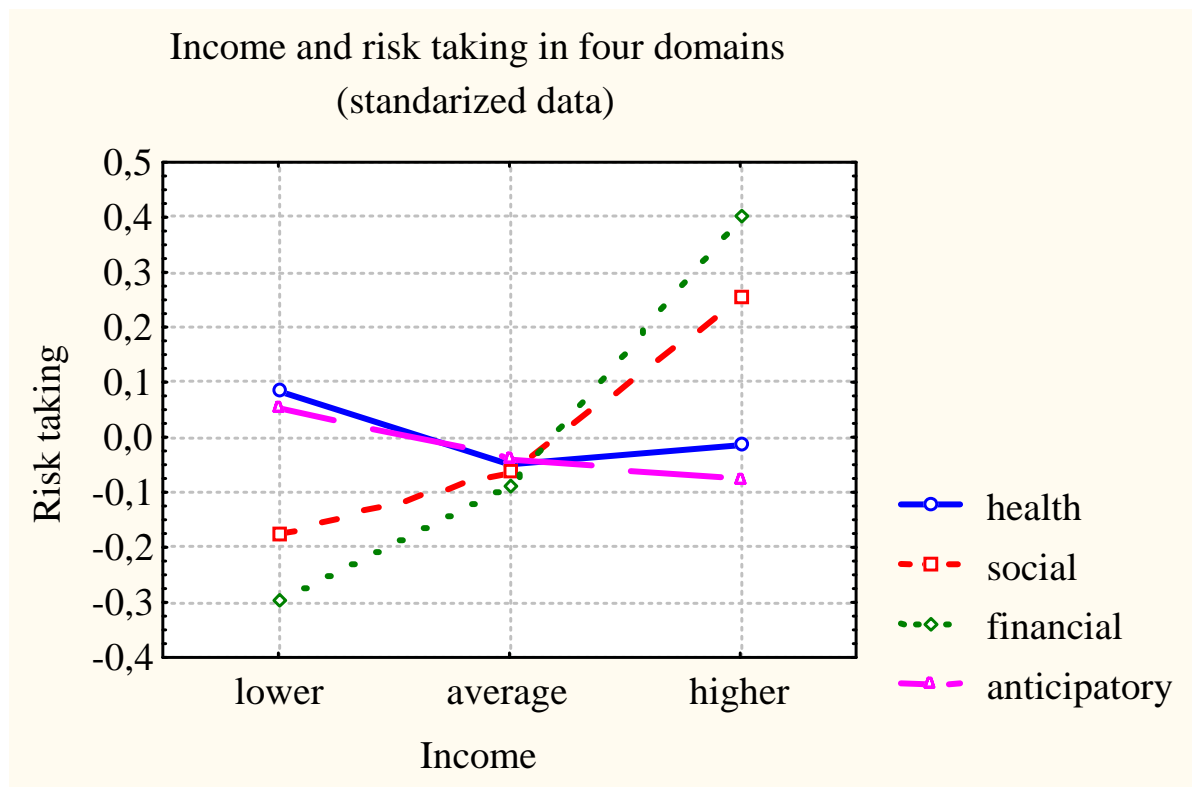


Figure 1. Eigenvalues of factors elicited in the factor analysis.



Health risk $F(2;401)=0.17$, n.s.;

Social risk $F(2;405)=5.20$, $p=0.006$;

Financial risk $F(2;397)=16.21$; $p<0.001$;

Anticipatory risk $F(2; 392)=0.94$, n.s.

Figure 2. Perceived own family income and risk taking in four domains (data standardized by average and standard deviation of all subjects).

Table 1. Factor loadings of 31 best-fitting items in the model and the total variance explained.

Bolded are the items assigned to adequate factors (risk propensity scales).

Variables (items)	Factor 1	Factor 2	Factor 3	Factor 4
washing fruits and vegetables	-0,618	-0,016	0,054	0,014
checking the expiry date of food products	-0,562	0,062	-0,049	0,024
planning your diet for the sake of health	-0,550	-0,068	-0,068	0,018
checking the guarantee available for services	-0,474	0,215	-0,008	-0,066
taking precautions against common cold	-0,470	0,003	-0,089	-0,064
following doctor's advice when ill	-0,462	-0,075	0,146	0,076
buying products of famous brands	-0,439	0,118	-0,057	0,003
regular medical checkups	-0,436	0,025	0,047	-0,110
neglecting to see a doctor when your health deteriorates	0,391	-0,108	0,025	0,148
expressing opinions different than others' on religious issues	-0,035	0,768	0,176	0,031
expressing opinions different than others' on political issues	-0,046	0,751	0,114	-0,020
expressing opinions different than others' on punishment for criminal acts	-0,136	0,664	0,120	-0,081
speaking in front of a large audience	-0,014	0,472	-0,092	-0,073
talking about sex in mixed company	0,052	0,432	-0,085	0,075
going to parties with people you don't know	0,026	0,364	-0,123	0,036
gambling on cards	0,007	0,006	0,612	0,145
gambling in a casino	-0,043	0,028	0,610	0,081
betting at races	-0,098	0,052	0,610	0,097
buying shares at the stock market	-0,053	-0,027	0,471	-0,164
offering bribes	0,045	0,026	0,433	-0,014
investing in investment funds	-0,160	-0,109	0,424	-0,115
making bets	0,130	0,167	0,392	0,142
investing in one's own business	0,070	0,151	0,338	-0,105
unjustified use of tax allowance	0,084	-0,109	0,328	-0,002
buying a casualty insurance policy	0,102	0,056	-0,096	-0,769
tax evasion	0,122	0,012	-0,054	-0,694
buying a personal liability insurance policy not connected with driving	0,006	0,036	-0,032	-0,430
saving money 'just in case'	-0,160	-0,096	-0,032	-0,391
taking a first-aid kit for longer trips	-0,253	0,031	0,095	-0,331
avoiding buying tickets in the last moment before departure	-0,099	-0,040	0,132	-0,314
not guaranteeing the loan of a person you know	0,103	0,012	0,033	0,477
total variance accounted for:	29,1%	9,0%	8,2%	5,7%

Table 2. Risk taking in four domains by those preferring sure vs. lottery form of payment in.

Risk propensity	the form of payment		t	df	p
	sure	lottery			
HR	4,36 n=149	4,60 n=249	-1,02	396	n.s.
SR	3,60 n=151	3,79 n=252	-1,09	401	n.s.
FR	1,13 n=145	1,57 n=247	-2,75	390	0,006
AR	2,34 n=140	2,39 n=251	-0,30	389	n.s.

Table 3. Risk taking in four domains by groups differing in saving activity, driving a car, insuring a property.

other risk areas	compared groups	n	risk taking domain			
			HR	SR	FR	AR
saving activity n=417	lower	164	4,67	3,64	1,03	2,74
	higher	189	4,43	3,78	1,76	2,04
	t		1,05	-0,78	-4,67	4,23
	df				381	376
	p		n.s.	n.s.	<0,001	<0,001
drivers n=287	risk-takers	124	5,28	3,81	2,16	2,45
	cautious	130	3,91	3,98	1,1	2,08
	t		5,35	-0,82	5,56	2,02
	df		272		270	269
	P		<0,001	n.s.	<0,001	0,044
real estate owners n=387	insuring	128	4,19	3,82	1,53	1,85
	not insuring	196	4,72	3,67	1,31	2,61
	t		-2,16	0,75	1,29	-4,49
	df		351			344
p		0,031	n.s.	n.s.	<0,001	

Table 4. Risk taking in four domains by groups differing in normative beliefs.

Risk propensity	normative beliefs		t	df	p
	cautious	risk-takers			
HR	4,44	4,53	-0,39	391	n.s.
SR	3,51	3,92	-2,28	393	0,023
FR	1,19	1,70	-3,21	385	0,001
AR	2,26	2,42	-0,99	380	n.s.

Table 5. Differences between female and male participants in risk taking in four domains.

Risk propensity	gender		t	df	p
	female	male			
HR	4,14	4,99	-3,85	402	< 0,001
SR	3,47	4,04	-3,23	406	0,001
FR	1,01	1,95	-6,20	397	< 0,001
AR	2,13	2,70	-3,51	393	< 0,001

Table 6. Differences between Polish and Greece subjects in risk taking in four domains.

Risk propensity	nationality		t	df	p
	Polish	Greece			
HR	4.50	3.26	4,79	457	<0.001
SR	3.68	4.22	-2,72	457	0.007
FR	1.37	1.58	-1,17	457	n.s.
AR	2.33	3.43	-6,07	457	<0.001