



## Under Risk

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“Risk is a situation which is difficult to classify”  
(Armenian male, 27)

*Abstract: The aim of this paper is to observe how the university students define risk. Firstly we try to explore how our subjects use this expression (i.e. how they define risk). Their answers were tested with content analysis technique, which helped us to highlight the most important attitudes of our subjects. In the second part we focused on five risk domains (originally tested by Blais & Weber, 2006). Because everybody will have different risk attitudes, when making decision involving ethical, financial, health or safety, recreational, and social risks. Although the pilot-survey was tested by MsC students this part contained a methodological problem, so this result could not be reliable. In the last part, according to the Domain-Specific Risk Taking Scale (Blais & Weber, 2006) we try to find differences between Risk-Taking, Risk-Perceptions, and Expected Benefits. Our research shows that risk definition could be divided into different meaning-groups and the respondents will order the different type of risks. Furthermore, our results indicate how can we use this validated psychometric scale for our population in the future.*

*Keywords: Risk, DOSPERT Scale, Survey*

### 1 Introduction

Risk taking is one of the stable personality traits which was widely studied in field of psychology. Economists focused on this problem after findings of Kahneman and Tversky were published (Kahneman & Tversky, 1979) who figured out how risk gives weight to our decisions. Although they handled risk as a variable which definition is obvious. The real deeper meaning, how the subjects define it, could be interesting as well. Theory of decision-theory began to grow and most of the researchers built risk-taking into his or her models. However Weber and her colleagues (Weber, et al., 2002) suggested a validated (i.e. scientifically approved) scale for measurement of risk. In 2006 a new (lighted) version was developed

which contains only 30 items (five risk domains) in three different degrees. We try to organize them into 1. Table.

Domain subscales or life domains	Risk-taking (How respondents engage in risky activities.)	Risk perception (How respondents asses the level of risk in each activities.)	Expected Benefits of risk (what kind of benefit respondents obtain in each risky situations.)
Ethical	Instruction: <i>“For each of the following statements, please indicate the likelihood that you would engage in the described activity or behavior if you were to find yourself in that situation.”</i> 7 points ranking scale	Instruction: <i>“we are interested in your gut level assessment of how risky each situation or behavior is.”</i> 7 points ranking scale	Instruction: <i>“For each of the following statements, please indicate the benefits you would obtain from each situation.”</i> 7 points ranking scale
Financial (Investment/Gambling)			
Health/Safety			
Recreational			
Social			

Table 1

DOSPERT 30 (Own table based on Center for Decision Sciences, Columbia Business School)

As it could be seen this test contains 30 statements (all subscales have 6 statements) in three different contexts. The authors measured validity of test and offered scoring instructions as well (i.e. concrete mathematical model how risk can be evaluated). The test was translated into different languages, most of all also in Hungarian.

That means all subjects need to read, understand and answer the same 30 sentences comparing 3 times, all together (in sum) 90 choices per a subject. Although it could be handled easily with a help of IT tools but telling the truth it can be called as respondents' friendly solution. In last semester we try to use this test and it was implemented. But our results were not stable, unfortunately. Maybe the source of the problem was that our subjects were not able to find differences between the before mentioned life-situations or they were impatient to pay attention for all items.

So the research questions was given, how this test can be suit to our population (in this case university students from different cultures). But first of all how risk could be defined in their mind. Examination of the Generation Y is increasingly important, as it not only represents a new challenge for the education system, but the labor market. (Kolnhofer-Derecskei-Reicher 2016)

## 2 Methodology

Regarding the literature we worked with the items and categories from Blais & Weber (2006). In frame of Research methodology course we worked with MsC students who helped us to design the survey. The survey contains four parts and can be found in the appendix. The first part asked the demographical background of respondents like gender, age or nationality. Because this survey was suited not only for Hungarian but foreign students as well, so the survey was in English. In the second part respondents should define risk with their own words. In the last half of survey we used the before mentioned scale's categories. Firstly, the answerers should evaluate which situation is more likely to happen to them. Finally, they need to judge which aspect influences their decision.

### 2.1 Limitation

Despite the fact, that we tried to manage the problem of scientific reliability and validity. Unfortunately, a problem was given in the second part. The opposite meaning of the instructions and scales descriptions should effects misunderstanding. That means, the subjects found "likelihood of the situation" and "risk" in the scale, which can confuse them. At the end we have decided that we skip out this part from the research. The following (table 2.) table shows the results, that proves the conflicting assessments. The present part had not any goals, because we can not be sure which questions were answered (i.e. did the students rank how the mentioned situations are likely or risky).

Statistics

	Ethical	Financial	Health	Social	Recreational
N	29	29	29	29	29
Valid	29	29	29	29	29
Missing	0	0	0	0	0
Mean	2,2069	3,1552	2,6207	3,7241	3,5862
Median	2,0000	3,0000	3,0000	4,0000	4,0000
Mode	1,00	4,00	3,00	2,00a	5,00
Std. Deviation	1,49712	1,49465	1,59046	1,57880	1,89957
Minimum	,00	,00	,00	1,00	,00
Maximum	6,00	6,00	6,00	6,00	6,00

a. Multiple modes exist. The smallest value is shown

Table 2

Given answers for the problematical part of survey

### 2.2 Materials and procedure

The whole research was made at the Obuda University. Firstly we discussed the problem and designed the survey with MsC students. After that, paper

questionnaires were given for students during the first Economic psychology lesson. This course is in English for Erasmus and Hungarian students. The instructions were general, and the papers were given personally to the participants. All of the responses were uploaded in a table. The two Hungarian and one German answers were translated into English, and all of them were checked by spelling. For the evaluation procedures we have used (free) NVivo content analysis software and SPSS.

### 2.3 Sample

Because our main conception was bearing an extrapolation, so we did not monitor representative sample. Moreover this method does not exact representativeness. The frequency tables of the sample are following:

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	15	51,7	51,7	51,7
	Female	14	48,3	48,3	100,0
	Total	29	100,0	100,0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19,00	2	6,9	6,9	6,9
	20,00	5	17,2	17,2	24,1
	21,00	6	20,7	20,7	44,8
	22,00	2	6,9	6,9	51,7
	23,00	10	34,5	34,5	86,2
	24,00	1	3,4	3,4	89,7
	25,00	2	6,9	6,9	96,6
	27,00	1	3,4	3,4	100,0
	Total	29	100,0	100,0	

Nationality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Armenian	1	3,4	3,4	3,4
	Romanian	1	3,4	3,4	6,9
	Turkish	2	6,9	6,9	13,8
	German	12	41,4	41,4	55,2
	Hungarian	8	27,6	27,6	82,8
	Dutch	1	3,4	3,4	86,2
	Ukrainian	1	3,4	3,4	89,7
	Spanish	1	3,4	3,4	93,1
	Iceland	1	3,4	3,4	96,6
	French	1	3,4	3,4	100,0
	Total	29	100,0	100,0	

Table 3  
Distribution of the sample

As we can realize the German and Hungarian students were over represented and most of the participants were 23 years old.

### 3 Results

Firstly we monitored the meaning of risk, what kind of expressions came firstly into subjects mind. It is necessary to underline, that non of the students speak English as native but they could use dictionaries during the research. The content analysis based on two stages: 1. automatic coding regarding frequencies of every words 2. open coding, which means that we read through the text several times and started to create relevant groups. These codes helped us to find some connections between the subsamples.

As we have mentioned earlier, the next part of the survey was not able to be evaluated. Last part we used descriptive statistics because all of the responses were measured on nominal scales.

#### 3.1 Content analysis

##### 3.1.1 Automatic coding

Software of NVivo code the text automatically which means without any meaning only the frequencies of the expressions will be counted.

Word	Length	Count	Weighted Percentage (%)	Similar Words
risk	4	20	8,16	risk
something	9	10	4,08	something
decision	8	9	3,67	decision, decisions
know	4	7	2,86	know, knowing
danger	6	6	2,45	danger, dangerous
situation	9	6	2,45	situation
take	4	6	2,45	take, takes
sometimes	9	5	2,04	sometimes
negative	8	4	1,63	negative
outcome	7	4	1,63	outcome
always	6	3	1,22	always
bad	3	3	1,22	bad

chance	6	3	1,22	chance
depends	7	3	1,22	depending, depends
fear	4	3	1,22	fear
good	4	3	1,22	good
life	4	3	1,22	life
losing	6	3	1,22	lose, losing
make	4	3	1,22	make, makes, making
new	3	3	1,22	new
things	6	3	1,22	things

Table 4  
Frequencies of used expressions

The automatic coding can be illustrated with word cloud diagrams, the size of the word shows its regularity. Gap-filling words like something are not important so we skipped them out.



Figure 1  
Cloud diagram of automatic coding

In sum this analysis indicates that the subjects judged risk as danger (bad or negative) decision situation or outcome. Often mentioned expressions provide a good base for open coding.

Content analysis solutions give us opportunities for deeper text mining without any explanations. The following pictures figure out the environment of the often mentioned terms.

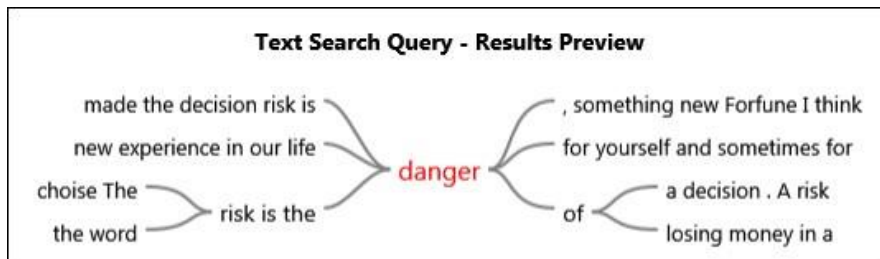
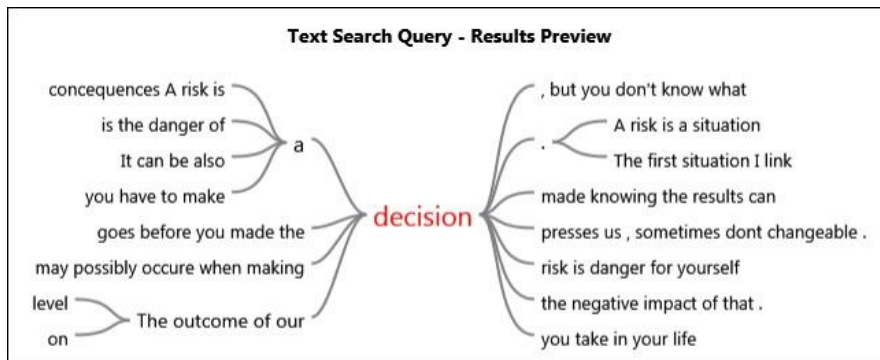
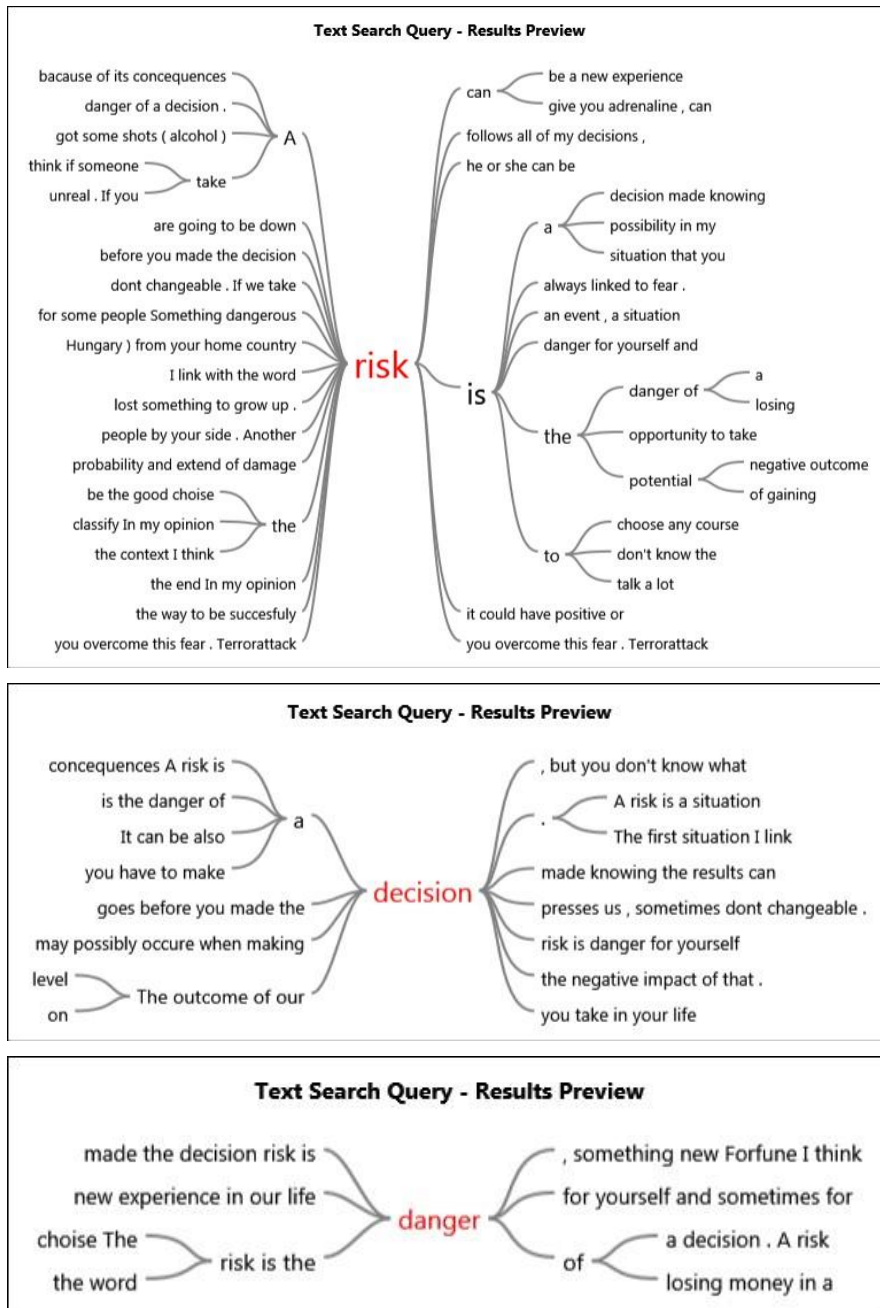


Figure 2  
Text searches regarding often mentioned terms

### 3.1.2 Open coding

After several times of extensive readings we have found the aforementioned code structure:

- targets of risk could be divided into
  - situation (n=4) when the subjects defined risk as a situation
  - possibility (n=5) when they described risk as a possible choices of their life
  - uncertainty (n=11) when they see risk as an uncertain problem (like in study of Kahneman and Tversky)
  - behavior (n=3) when they identified risk with a behavior
  - last but not least when the students gave only an example (n=4).
- the direction of the outcome were defined in three different ways
  - positive (n=2)
  - negative (n=11) or
  - both (n=14)
- the whole (altogether) meanings (essences of the definition) were the next three
  - some student (n=6) concentrated on the outcome of risk
  - others (n=7) focused on the danger
  - and the rest (n=8) highlighted the whole process of decision.

There was only one significant ( $p=0,95$ ) connections between codes. In case of danger and negative outcome directions symmetric measures showed positive relationship (Cramer's  $V= 0,558$   $p=0,029$ ).

In case comparison of the subsamples regarding gender only one major difference could be found (see Figure 3). Women mentioned uncertainty oftener than men.



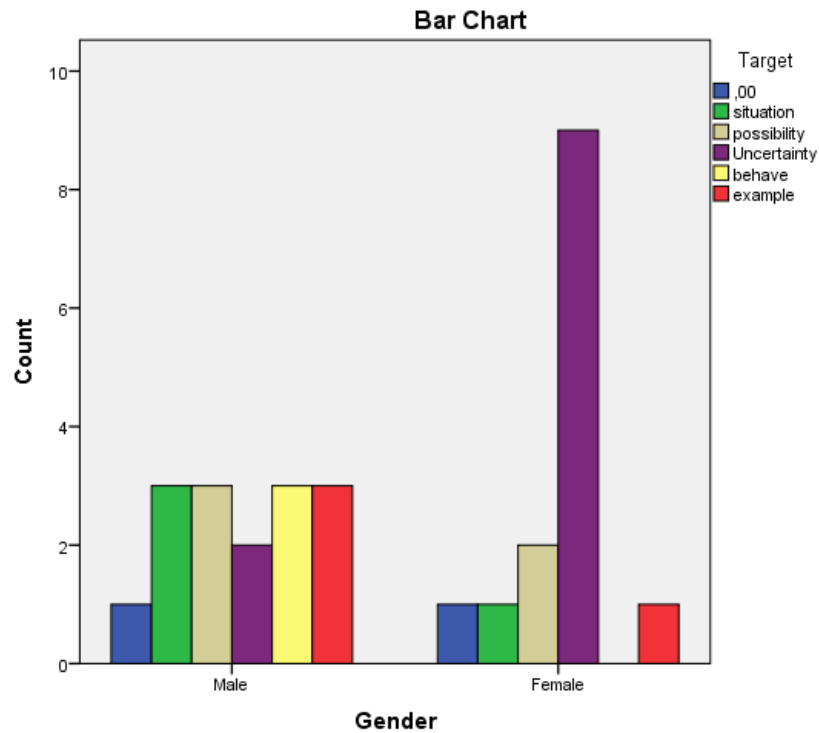


Figure 3  
Text searches regarding often mentioned terms

### 3.2 Frequency tables of aspects

In the last part we have used frequencies and cross tabs analysis to determine sources and motivations of risk. Originally Weber and Blais (Blais & Weber, 2006) used multilevel modeling, they investigated the risk the risk return relationship between risk taking and risk perception. Their empirical investigations provided a multiple risk construct which contains three observation of risk. They found

1. differences in the perceptions of the riskiness of risky choice options (perception)
2. differences in the perceptions of perceived benefits of risk (benefit)
3. differences in willingness to take part in a risky situation (risk-taking).

DOSPERT Scale allows us to assess conventional risk attitudes (reported level of risk-taking), perceived risk-attitudes (reported willingness to engage in a risky activity) and outcome of risk (reported value of taking part in a risky situation).

In our study we were interested in which aspects will mostly influence students decision in a risky situation. The students needed to choose which options will impact on their decision. The last table provides us an overview about the choices.

Benefit					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	24	82,8	82,8	82,8
	no	1	3,4	3,4	86,2
	no opinion	4	13,8	13,8	100,0
	Total	29	100,0	100,0	

Perceptions					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	13	44,8	44,8	44,8
	no	8	27,6	27,6	72,4
	no opinion	8	27,6	27,6	100,0
	Total	29	100,0	100,0	

Risk-taking					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	19	65,5	65,5	65,5
	no	4	13,8	13,8	79,3
	no opinion	6	20,7	20,7	100,0
	Total	29	100,0	100,0	

Table 5  
Frequency tables of each aspects

Maybe the order of the questions influenced the assessments, but the oftenest influence-factor was the benefit (outcome) of a decision. Comparing the frequencies of generated open codes with DOSPERT aspects we have found middle strong relationships between danger and risk-taking (Cramer's  $V= 0,476$   $p=0,038$ ). According to gender there were no differences.

### Conclusions


Goal of this study is to have an overview (or a work definition) what the students think about risk. Content analysis caused an useful essence about the risk's associations of our sample. Aim of risk regarding our sample is decision in a possible situation which can end in good or bad results so it is dangerous.

Direction: The current results suggest that risk means danger decision for the students. Only two students evaluated risk as a positive term. They identified risk is a chance or an opportunity. Most of the students mentioned the both sides of the possible outcome that means risk is an option which has to be weight. Some of the

students gave a concrete example to define risk. DOSPERT scale contains 30 example from different life situation three times. However, this scale is a validated solution to measure risk. Our preliminary studies showed that together 90 statements are difficult to handle. That is why we tried to evaluate the dimensions of the before mentioned scale. For that we asked our respondents ranking the five different life situations from three different point of views (see Table 1). Unfortunately we could not be able to take in consideration all of different dimensions of risky situations. But we have found that the final benefit of a risky decision will influence respondents mostly (like outcome as a regularly mentioned expression in the definitions). Finally it is necessary not skip out personality. We tried to take consideration all limitations of this research, in sum it could be a good base for the future. One of the advantages that we had a feedback from our respondents' definitions which show some similarities with the DOSPERT Scale.

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**Appendix**

**Risky survey**

**Some background questions:**

- **Your Gender:**
  - Male
  - Female
- **Your Age:** I am ..... years old.
- **Your nationality:** .....

**What is risk? How can you describe it? (You can answer with your very first ideas, words which come in to your mind or you can draw as well.)**

**What do you think which situation is more likely to happen to you? Please rate separately all of them (extremely risky: 1 .... not at all: 6, No opinion: 0)**

	Ethical situations like “Leaving your young children alone at home while running an errand.”
	Financial situations like “Investing 10% of your annual income in a new business venture.”

	Health or Safety situations like “Riding a motorcycle without a helmet.”
	Social situations like “Choosing a career that you truly enjoy over a more secure one.”
	Recreational situations like “Bungee jumping off a tall bridge.”

**If you need to value a situation (regarding risk) which aspect influence your decision? (Y: yes, N: no, NO: No opinion)**

	“Expected Benefits of the situations” the benefits you would obtain from each situation.
	“Perceptions of these situations” In this case each situations have to be indicated (is the possibility of negative consequences) how risky you perceive it.
	“Risk-Taking”: the likelihood that you would engage in the described activity or behavior if you were to find yourself in that situation.

**Thank You for your answers!**

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