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The Influence of Academic Pressure on Risk Decision Preferences: An Experimental Study on a Malaysian University

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Abstract: Individuals' risk preferences frequently have an impact on their decision-making. There are multiple factors that influence a person's risk decision-making preference, and pressure from both internal and external sources is one of them. The decision-making framing effect and risk preference theory are used in this research to investigate the participants' tendency to choose different risky decision types, as well as the relationship between the dimensions of academic pressure and risky decision types. The study uses experimental research, questionnaires and correlation analysis to conclude that people seek low risk when the choice involves loss, and students are more inclined to choose high-risk, high-loss decisions when there is less competitive pressure. The research findings highlight the influence of peer competition on students' risk decision-making preferences and hope to further ideas about risk decision-making preferences and the advancement of higher education.

1. Introduction

1.1 Background

Nowadays, students who are subjected to higher education experience higher levels of academic stress in the face of various societal pressures of life. Academic stress is a major part of the stress in students' lives, and excessive academic stress can adversely affect students physically and psychologically, thereby impairing their academic effectiveness (Yang, 2014)[1]. Decision making is subject to influence from different aspects which involves a number of variables for physical, psychological, and environmental reasons. Making decisions, especially when students are under academic pressure, can be influenced by their decision-making preferences, particularly those associated to risk-taking.

1.2 Problem Statement

Saqib and Chan (2015)[2] simulated the effect of time pressure on decision-making by giving participants a limited amount of time to make decisions. The experimental results show that under time pressure, people tend to make decisions contrary to their original risk preference. Jorien et al. (2023)[3] found that obedience pressure significantly influences their risk choices, but conformity pressure could be effective only when the peer information is delivered by an authority figure. It is worth noting that friends and classmates are matched on socio-demographic characteristics but are not assortative matched on risk preferences. In contrast, social interaction strongly increases the similarity of teenagers' risky choices. A large fraction of peers aligns their choices perfectly (Konstantin et al., 2019)[4]. Risky decision-making is a cognitive domain that relates to emotion-related impulsivity. (Matthew et al., 2022)[5]. In investment decisions, participants show a pronounced sunk-cost effect, particularly for options with low expected value. Acute pressure reduced this tendency to invest in risky options with low probability of success following high prior investments. The current students' postgraduate academic pressure needs to be solved, which is very important for educational institutions, students themselves and the psychological field. These relevant institutions have the responsibility and ability to introduce or formulate some plans to help students deal with related problems. The current situation of academic pressure requires attention from all sides.

2. Literature Review

2.1 Academic Pressure

Psychologist Selye proposed the theory of pressure, which he defined as a non-specific reaction to any demand, and later on borrowed to refer to the difficulties and adversities faced by human beings.

Yang & Zhang (2022)[6] understands academic pressure as "the learner's reaction or subjective feeling to the demands of the internal and external academic environment that exceeds his or her ability to cope or may threaten him or her" .

2.2 Risk Decision

According to psychologist Hastie, decision making is a process in which humans choose a certain action in response to their own desires and beliefs, which are their goals, outcomes, personal values, expectations, perceptions, and means. This shows that decision making is actually a process in which people make a choice about what they want to achieve an end or an outcome. The basic concept of risk-sensitivity theory is that, even if the average expected value of the two options is the same, people would choose to select the high-risk option if the safe and low-risk option does not adequately meet their demands (Song et al., 2017)[7].

Human survival pressure, according to relevant studies on risk sensitivity theory, may motivate individuals to exhibit high-risk decision-making behavior patterns, particularly when there is an enormous gap between their ideal state and their actual condition. This phenomenon happens across genders and circumstances (Mishra & Lalumi ère, 2010)[8].

2.3 Study on the relationship between academic pressure and risky decision making

Studies have shown that academic pressure can have significant effects on adolescents' behavior and decision-making processes. Weiss et al. (2019)[9] found that social influence, such as peer pressure, can lead to increased risk-taking behaviors, including drug abuse, in youth. Li et al. (2019)[10] highlighted the role of motivation in risky decision-making, showing that higher approach motivation

was associated with increased risk-taking behaviors in adolescents. Yu et al. (2020)[10] demonstrated that preferences and response times are sensitive to risk and pressure levels, suggesting that academic pressure may impact decision-making processes. Nelson et al. (1988)[11] explored the effects of subject anticipatory memory monitoring on learning time allocation decisions and found that adults allocate more learning time to items judged to be difficult and to items judged to be less learned. However, adult subjects have been found to allocate learning time to items judged to be easy or to items judged to be moderately difficult when time pressure was high. Higher risk-seeking preferences arise when the actual benefit of the risky option is higher than that of the safe option. Conversely, when the empirical benefit of the risky option is lower than the safe option, subjects develop higher risk-avoidance preferences (Hou et al., 2019)[12]. There is a negative correlation between individuals' risk perception and benefit perception under time pressure. And the riskier an individual perceives an item to be, the smaller the benefit gained by choosing that item, indicating that decision makers have higher expectations of loss under time pressure (Finucane et al., 2000)[13].

3. Research Objectives

Generally speaking, the main purpose of this study is to explore the subjects' tendency to choose different risk decision-making types and the relationship between various dimensions of academic pressure and risk decision-making types.

Based on the above general goals, the following five specific goals have been formulated:

1) According to the answers to the academic pressure questionnaire, what is the current pressure situation of the subjects in each dimension?

2) According to the experimental results, what type of risk decision-making will the subjects tend to make?

3) Based on demographic variables, is there any significant difference in each dimension of academic pressure between subjects in terms of age, gender, semester, place of origin, and whether they are local students?

4) Based on demographic variables, is there any significant difference in the risk decision-making types among the subjects in different ages, different semesters, different places of origin, and whether they are local students?

5) What is the correlation between the various dimensions of academic pressure and risk decision-making types?

4. Methodology

4.1 Research Design

This study is quantitative. The research mainly uses experimental research, questionnaire survey and correlation analysis. The research will be conducted in a university in Malaysia, and students from different faculties will be invited to participate voluntarily. The participating students are mainly current students majoring in educational psychology. Participants will complete a questionnaire designed to measure their level of academic pressure. And participants will then be asked to participate in a risky decision-making experiment.

4.2 Instrument

Questionnaire (Graduate student academic pressure measurement tool)

The academic pressure questionnaire for postgraduates adopts Han Hongmin's academic pressure questionnaire for postgraduates, which draws on the scales of ASQ, AESI and PLSQ. The α

coefficient of the original questionnaire is 0.918, the KMO value is 0.839, and the factor loading is 69.318%, which has good reliability and validity. The questionnaire continues the four dimensions of the original questionnaire, namely professional learning pressure (items: 1, 2, 3, 4, 5, 6), research pressure (items: 7, 8, 9, 10, 11, 12), pressure from external expectations (items: 13, 14, 15), and competitive pressure (items: 16, 17, 18).

Experiment Description

This experiment uses the Risky Decision-Making Experiment from Chapter 13 on CogLab. In each trial, subjects are asked to choose between (1) a guaranteed outcome or (2) spinning the wheel. Guarantees can be gains or losses. For roulette, subjects get information about the current winning or losing odds and the possible winning or losing amount. One type of trial is considered riskier (i.e., has a lower chance of winning), and the second type of trial is considered less risky (i.e., has a greater chance of winning). For all "small" trials (those with small amounts of money), the expected value of the gamble is (statistically) the same as the guaranteed win or loss (within 25 cents). This means that, in the long run. Whether the subject chose roulette or chose the guaranteed option each time, his final expected win or loss amount was the same. The same goes for all "large" trials (those with large sums of money). The independent variables in this experiment are (1) whether the trial gave subject a guaranteed gain or loss, (2) whether the guaranteed amount was large or small, and (3) whether the odds on the wheel were more risky or less risky. The dependent variable is the proportion of times subject selected the gamble option for each type of trial.

4.3 Data Collection

The social science statistical software was used to analyze the information obtained from the questionnaires and experimental results using (SPSS) version 26 software.

4.4 Sampling Method

In this study, the students in a university in Malaysia are used as the research objects. The subjects were asked to fill in the questionnaire according to their actual situation and return the questionnaire in time at the end. A total of 31 questionnaires were collected, 1 questionnaire was excluded, and 30 valid questionnaires were obtained.

5. Findings

Significant Difference Test.

Firstly, in order to explore the differences between each risk decision-making dimension and each pressure dimension whether they are local students or Chinese students, the method of independent sample T-test is adopted for analysis. The results are as follows.

According to the independent sample t-test results (Table 1), it can be seen that each risk decision is different in whether it is a local student or a Chinese student. The significance test of Large Loss More Risky on whether it is a local student or a Chinese student is 0.047, which is significantly smaller than 0.05. That illustrates there are differences between local students and Chinese students in Large Loss More Risk. According to the mean, it can be seen that the results of Large Loss More Risk of local students are significantly higher than those of Chinese students. Secondly, in order to explore the differences of each risk decision-making dimension and each stress dimension in different semesters, a single factor analysis of variance was adopted. The results are as follows. According to the Table 1, it is clear that there is no significant difference in each dimension in different semesters.

Table 1: Difference Analysis of Each Dimension among Local or Chinese Students

dimension category	ioc	cases	mean	standard deviation	t	sig
Small Gain Less Risky	Chinese	15	0.7333	0.33363	0.138	0.891
	local	15	0.7167	0.3255		
Small Gain More Risky	Chinese	15	0.4167	0.37401	-1.871	0.072
	local	15	0.6333	0.24761		
Large Gain Less Risky	Chinese	15	0.7833	0.28137	0.932	0.359
	local	15	0.6833	0.3057		
Large Gain More Risky	Chinese	15	0.5333	0.38807	-0.808	0.426
	local	15	0.6333	0.28137		
Small Loss Less Risky	Chinese	15	0.7167	0.37639	0.478	0.636
	local	15	0.65	0.3873		
Small Loss More Risky	Chinese	15	0.4333	0.3594	-0.402	0.69
	local	15	0.4833	0.31997		
Large Loss Less Risky	Chinese	15	0.6667	0.36187	0.133	0.895
	local	15	0.65	0.32459		
dimension category	ioc	cases	mean	standard deviation	t	sig
Large Loss More Risky	Chinese	15	0.3833	0.36433	-2.078	0.047
	local	15	0.65	0.33806		
professional study pressure	Chinese	15	3.2	0.84562	0.235	0.816
	local	15	3.1333	0.70486		
research pressure	Chinese	15	3.3778	0.84859	0.526	0.603
	local	15	3.2222	0.76808		
external expectations	Chinese	15	2.6	0.89265	0.634	0.531
	local	15	2.3778	1.0225		
competitive pressure	Chinese	15	3.1111	1.2451	1.796	0.083
	local	15	2.3778	0.97482		

Table 2: Difference Analysis of Each Dimension among Local or Chinese Students

Correlation							
variable	correlation	professional study pressure	research pressure	External expectations	competitive pressure	Small Gain Less Risky	Small Gain More Risky
professional study pressure	Pearson Correlation	1					
research pressure	Pearson Correlation	.625**	1				
External expectations	Pearson Correlation	.630**	.575**	1			
competitive pressure	Pearson Correlation	.563**	.666**	.594**	1		
Small Gain Less Risky	Pearson Correlation	0.122	0.235	0.088	0.044	1	
Small Gain More Risky	Pearson Correlation	0.278	-0.051	0.06	-0.178	0.127	1
Large Gain Less	Pearson	0.051	0.231	0.113	0.055	.631**	0.049

Risky	Correlation						
Large Gain More Risky	Pearson Correlation	0.039	-0.053	0.129	-0.252	0.039	.426*
Small Loss Less Risky	Pearson Correlation	0.065	0.016	0.07	-0.093	.657**	0.118
Small Loss More Risky	Pearson Correlation	0.056	-0.161	-0.078	-0.213	-0.01	.438*
Large Loss Less Risky	Pearson Correlation	-0.156	-0.081	-0.241	-0.128	.667**	0.176
Large Loss More Risky	Pearson Correlation	-0.162	-0.299	-0.163	-.364*	-0.05	.383*

** Correlation is highly significant at the 0.01 level (two-tailed).
* Correlation is significant at the 0.05 level (two-tailed).

variable	correlation	Large Gain Less Risky	Large Gain More Risky	Small Loss Less Risky	Small Loss More Risky	Large Loss Less Risky	Large Loss More Risky
professional study pressure	Pearson Correlation						
research pressure	Pearson Correlation						
External expectations	Pearson Correlation						
competitive pressure	Pearson Correlation						
Small Gain Less Risky	Pearson Correlation						
Small Gain More Risky	Pearson Correlation						
Large Gain Less Risky	Pearson Correlation	1					
Large Gain More Risky	Pearson Correlation	0.255	1				
Small Loss Less Risky	Pearson Correlation	.614**	0.198	1			
Small Loss More Risky	Pearson Correlation	0.234	.566**	0.165	1		
Large Loss Less Risky	Pearson Correlation	.724**	0.126	.628**	0.25	1	
Large Loss More Risky	Pearson Correlation	0.042	.644**	0.054	.508**	0.253	1

** Correlation is highly significant at the 0.01 level (two-tailed).
* Correlation is significant at the 0.05 level (two-tailed).

The correlation analysis results on Table 2 shows that there is no correlation between many dimensions.

But among them, the correlation coefficient between Large Loss More Risky and competitive pressure is -0.36*, which is a negative correlation. The correlation coefficient is less than 0.

6. Discussion

The results of this study show that when the choice involves loss, people tend to seek low risk. Presumably, the root cause is that the experiment doesn't simulate a real risky decision-making

situation. Subjects know it's just an experiment and can't really lose anything, so they tend to gamble. And it would be fun to experiment with choosing the gambling option and they might be inclined to click on the gambling option. According to the results of the independent sample T-test, it can be seen that there is no difference between Chinese and local students in various dimensions of stress, and there is basically no difference in the overall decision-making type. However, in terms of high risk and high loss, Malaysian local students are better than Chinese students. Students are more inclined to make such a decision. The reason may be that the average age of Chinese students who come to Malaysia to study for a master's degree is relatively young, and most of them come to study for a master's degree just after graduation. On the contrary, many local students hold part-time jobs while in school, providing them with a reasonably steady source of income that allows them to tolerate higher losses. So even if there are some options with high risk of loss, local students may still choose gambling options. They are unwilling to accept fixed losses. This finding is in line with earlier studies that found those with greater economic advantages usually show greater adaptability. Actually, this is the underlying cause of risky conduct among people (Song et al., 2017)[14]. One-way variance results show that there is no difference between the dimensions of risk decision-making and pressure across semesters. This is partly due to the fact that all of the disciplines are taught masters, which is connected to their own arrangements for course selection. It does not imply that a certain semester would inevitably have a given level of pressure. There isn't much of a variation in age because the group is consistent at roughly 25.

7. Conclusion and Implication

This study explores how individuals make decisions based on their risk appetite, which is crucial for both practical decision-making and the theoretical advancement in the field of risk decision-making. Drawing on the risk sensitivity hypothesis and framing effect theory, this research diverges from previous findings by demonstrating a preference for risk-taking over fixed outcomes. The implications for education are significant, suggesting that educators should tailor mental health support and educational environments to align with students' decision-making preferences, especially under academic stress. The findings, focusing on graduate students in Malaysia, highlight variations in risk decision-making, the impact of academic stress, and offer practical recommendations for educational strategies. This contributes to the ongoing development of cognitive psychology's utility theory.

References

[1] Yang, X. (2014). A review of research on college students' pressure and pressure management strategies. Youth Times, 2, 35-36.

[2] Saqib, N. U., & Chan, E. Y. (2015). Time pressure reverses risk preferences. Organizational Behavior and Human Decision Processes, 130, 58-68.

[3] Jorien, L.P., Gallia, S., Zvi S., & Desmond T. (2023). Social influence pressures and the risk preferences of aspiring financial market professionals. Journal of Accounting Education, 62, 100828. https://doi.org/10. 1016/j. jaccedu. 2022.100828

[4] Konstantin, E. L., Melanie L., Joachim W. (2019). Assortative matching and social interaction: A field experiment on adolescents' risky choices. Journal of Economic Behavior and Organization 170, 313–340. https://doi. org/10. 1016/j.jebo.2019.12.011

[5] Matthew V. E., Sheri L. J., Jennifer G. P., Daniela E. M. L., & Hanna K. (2022). Emotion-related impulsivity and risky decision-making: A systematic review and meta-regression. Clinical Psychology Review, 100, 102232. https://doi.org/10.1016/j.cpr.2022.102232

[6] Yang, B., & Zhang, X. (2022). The relationship between academic pressure and online gaming addiction and research on countermeasures. Advances in Social Sciences, 11, 800.

[7] Song Y., Xu R., Xing C. (2017). Risk-sensitivity theory: Need motivates risky decision-making. Advances in Psychological Science, 25(3), 486-499.

[8] Mishra, S., & Lalumière, M. L. (2010). You can't always get what you want: The motivational effect of need on risk-sensitive decision-making. Journal of Experimental Social Psychology, 46, 605–611.
[9] Weiss, V. G., Hammerslag, L. R., & Bardo, M. T. (2020). Effect of a social peer on risky decision making in male Sprague Dawley rats. Experimental and Clinical Psychopharmacology, 28(1), 26–31. https://doi.org/ 10.1037/ pha0000298
[10] Yu, J., & Hyland, M. (2020). A generalized diffusion model for preference and response time: Application to ordering mobility-on-demand services. Transportation Research. Part C, Emerging Technologies, 121, 102854. https://doi.org/10.1016/j.trc.2020.102854
[11] Liu, X., Fang, G., & Yang, X. (2004). An overview of research on study time allocation decision-making ability in foreign countries. Advances in Psychological Science, 12(4), 524-535.
[12] Hou, Y., Chen, S., & Meng, S. (2019). Reflex effects and learning speed of DE conflict in gain and loss scenarios. Studies of Psychology and Behavior, 17(2), 268.
[13] Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The affect heuristic in judgments of risks and benefits. Journal of behavioral decision making, 13(1), 1-17.
[14] Mishra, S., & Lalumière, M. L. (2010). You can't always get what you want: The motivational effect of need on risk-sensitive decision-making. Journal of Experimental Social Psychology, 46, 605–611.