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Uncertain Consumption Preference under Mortality Salience

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Abstract

Based on the relevant theoretical research on mortality salience and general self-efficacy, this paper tests the impact of mortality salience on uncertain consumption intention through experiments. It is found that mortality salience increases consumers' preference to choose uncertain probabilistic promotion methods, but decreases individuals' evaluation of new products. During the process above, the moderating effect of general self-efficacy was tested. Based on the results, this study provides specific suggestions on the marketing and product strategies in the context of mortality salience.

Keywords: mortality salience, new products, probabilistic promotion, general self-efficacy

1. Introduction

1.1 Research Background

The COVID-19 brought a huge impact on the world in just a few months. Especially in the early stage of the epidemic, the death panic caused by it lingered around everyone. When individuals are directly facing death, their death anxiety keep rising as the epidemic is intensifying. The fear of the inevitability and uncertainty of death awakens in their pre-consciousness, affecting their behavior and life. As a reflection of personal needs and values, consumption is inevitably affected by such fear. For example, people will have higher shopping desire, buy more luxury goods, and increase the consumption of pro-social products.

Therefore, based on Terror Management Theory (TMT), this paper proposes the hypothesis that mortality salience affects consumers' uncertain consumption preference from the perspective of normal consumption behavior.

1.2 Purpose and Significance of this Study

The purpose of this study is to explore the impact of mortality salience on uncertain consumption preferences through experimental research.

In terms of theoretical significance, from the perspective of Terror Management Theory, this paper further expands the previous discussion that mortality salience reduces consumers' pursuit of brand diversification (Note 1). From the perspective of uncertainty, this paper studies the impact of mortality salience on promotion methods and new product preferences, and incorporates general self-efficiency as a moderator to further explain consumers' intention.

In terms of practice, at present, there is little research on death anxiety caused by mortality salience in the field of consumer behavior in the academia and industry in China. After the outbreak of mass or catastrophic death events such as COVID-19 and Zhengzhou flood, companies are reminded to pay more attention to this field. This paper closely follows the current events and explores consumer psychology in the context of the post epidemic era. The research can provide new ideas for companies and brands, helping them understand the current consumption trends, so that they can effectively adjust the product strategies and marketing strategies.

1.3 Research Framework

This paper mainly consists of six parts. Part 1, the Introduction, describes the research background and other basic information of this paper. In Part 2, mortality salience, Terror Management Theory, self-efficacy and other related theoretical basis is introduced, and the research status at home and abroad is reviewed. Part 3 designs the research model for the impact of mortality salience on uncertain consumption preferences, and puts forward 4 hypotheses. Part 4 designs and carries out the experiments, conducts the pre-research analysis and the empirical analysis of 2 experiments, and verifies the hypotheses. Conclusions are drawn and discussed in Part 5. Part 6 summarizes the research results and comes up with suggestions for companies in the context of mortality salience.

1.4 Research Methods

Firstly, this paper reviewed the literature in mortality salience, general self-efficacy and other related fields, and constructed the research model of this study by reviewing, integrating and refining the definitions and measurement of variables from the experiments in different literature and the relationship between the variables. After continuous modification of the measurement items, the formal experimental scheme of this study was determined and the experiment was carried out. Then the valid experimental data collected were tested and analyzed with SPSS. Finally, the impact of mortality salience on uncertain consumption preferences was discussed, and relevant thoughts and suggestions put forward for companies and brands in their marketing and sales strategies.

1.5 Innovations

The COVID-19 has brought about a significant impact on human society and aroused people's anxiety and fear of death. However, there are few studies on the impact of mortality salience and death anxiety on consumption in China. The topic of this study takes mortality salience as a start point, and innovatively integrates mortality salience with the preference for and choice of uncertain consumption to explore the impact of mortality salience on people's preference in uncertain consumption.

From the perspective of the Terror Management Theory, most researchers focus on the consumption behavior under multiple defense mechanisms such as cultural worldview, self-esteem and attachment to close relationship due to the lack of sense of control caused by the inevitability of death in the context of mortality salience. In contrast, this paper focuses on the mortality salience experience to observe consumers' preference for uncertain consumption, which provides a new perspective for the study of the Terror Management Theory. At the same time, general self-efficiency is included as the moderator to further explain the consumers' intention.

2. Literature Review and Theoretical Basis

2.1 Overview of Terror Management Theory

Terror Management Theory holds that when people realize that their death is inevitable, they will have extreme terror, when they will have difficulty in continuing their life and activities under this fear. Therefore, people will use corresponding defense mechanisms to avoid experiencing such terror of survival in daily life. The defense mechanism of individuals facing death is summarized as a dual-process model, which consists of 2 stages (Note 2): proximal defense and distal defense. Proximal defense means that when exposed to death message, individuals consciously and actively reject thinking about death in order to avoid its impact. Then the death consciousness will enter the individual's subconsciousness, where the distal defense mechanism will be enabled. At this point, people will unconsciously alleviate the anxiety caused by death through distal defense mechanisms such as worldview defense and self-esteem. Current research mainly focuses on the distal defense mechanism, and studies people's unconscious defense behavior in the context of mortality salience.

Early studies believed that the distal defense includes 2 mechanisms: the worldview defense (that is, individuals gain a sense of security and transcendence of death by sharing and abiding by the same beliefs as most people) (Note 3) and the enhancement of self-esteem (that is, individuals reduce the anxiety resulting from mortality salience by subjectively identifying, abiding by and strengthening the views or behaviors from which their self-esteem comes) (Note 4). Later, several scholars put forward the third defense mechanism, the pursuit of close relationship, which can alleviate anxiety through intimacy, attachment and connection (Note 5). At present, a large amount of experimental data have verified and supported these three defense mechanisms as the main defense systems against death anxiety.

2.2 Mortality Salience and Consumer Behavior

Mortality salience means that individuals are forced to awaken their death consciousness by directly facing death message. It is also often used to awaken subjects' thinking about death in experiments related to death and human psychological mechanism (Note 6). When the perspective of the impact of mortality salience is applied in consumer behavior, the 3 distal defense mechanisms described in TMT can also be identified. In addition, consumption can also reflect consumers' needs for self survival in their consumption (which is considered by some scholars as a worldview defense).

The first is the need for self-continuance in consumption brought by the particularity of death. Self-continuance refers to the continuation of one's body in some way, or the achievement of spiritual eternity. For physical continuance, the study of Yunhui Huang and Jaideep Sengupta (2020) reveals that after receiving disease messages (especially messages of infectious diseases), consumers will have higher consumption preferences for atypical foods and drinks, where fear of infection and crowd avoidance play a mediating role (Note 7). For spiritual continuity, relevant studies indicate that valuables such as jewelry and antiques can realize symbolic immortality

through inheritance from generation to generation. Gentry et al. (1995) found that the elderly are more willing to hold items with value of family inheritance, and the inheritance of such items will become the continuation of themselves (Note 8). Future generations are also part of people's self continuity (blood continuity). Therefore, when facing the death anxiety caused by mortality salience, the elderly will pay more attention to future generations and give corresponding support. The study of Kopp and Pullen reveals that with the passage of life, elderly users will increase the purchase of death insurance, etc., in order to provide corresponding subsidies for their offspring at critical moments (such as marriage, entering a higher school, etc.). Donation has also become an embodiment of self continuity (Note 9). Jonas et al. (2002) found that mortality salience can make individuals increase their money donation (Note 10). Furthermore, Lea and Katherine (2020) revealed that when items are considered highly related to their ego (such as those including their signatures), consumers in the context of mortality salience are more likely to donate them to charities(Note 11).

The second is the consumption that strengthens the worldview defense. Worldview defense in consumption can be expressed as ingroup consumption or as the embodiment of some universal values in consumption. Ingroup consumption refers to the consumption of specific products that reinforces the sense of identity with the group or individual conceptions, among which the consumption of domestic brands is the most typical. As domestic brands symbolize their home country and national industry, which carries a strong sense of national identity and pride, they often become a prior choice for individuals in the context of mortality salience. For example, Friese and Hofmann (2008) found in their experiment that in the context of mortality salience, domestic products will be more favored by consumers(Note 12). Liu Wumei and Wang Haizhong (2014) reached similar conclusions in their exploration of the changes in consumption brought about by mortality salience in developing countries (Note 13). In addition, worldview defense also involves some universal values and concepts (Note 14), such as materialism and hedonism. Pursuit of material and pleasure has become a world value shared by most groups in the world. Many researchers have revealed that the individuals' consumption desire will increase significantly in the context of mortality salience. For example, Arndt et al. demonstrated that the consumption of American people increased significantly in the first quarter after the September 11 Terrorist Attacks (Note 15). Tang Xinya (2021) also found that the threat perception of COVID-19 strengthened consumers' excessive consumption (Note 16). Kasser and Sheldon (2000) revealed that in the context of mortality salience, people will prefer hedonic consumption as well as excessive consumption (Note 17).

Another is the consumption that enhances self-esteem. According to the three defense mechanisms of the TMT, the anxiety brought by mortality salience will make individuals enhance their self-esteem to alleviate the fear of death. Therefore, consumers will tend to buy goods that improve their self-esteem and personal status, or demonstrate consumption behaviors that improve their self-esteem. Mandel and Heine (1999) revealed through experimental research that consumers will be more willing to buy luxury goods such as Lexus cars and Rolex watches in the context of mortality salience, because luxury goods, as a symbol of social status, can be used to improve individual self-esteem and alleviate their anxiety (Note 18). The research of Zhou Shuang (2018) also came to the conclusion that mortality salience will improve consumers' willingness to buy conspicuous goods (Note 19). Ferraro et al. (2005) found that mortality salience can make women with high physical self-esteem improve their dietary control and requirements on their appearance, so as to improve their self-esteem (Note 20).

The last is the attachment to close relationship. The mechanism of the attachment to close relationship is embodied as an emotional attachment in consumer behavior. This defense mechanism focuses on diversification of the consumption and nostalgic consumption. Rindfleisch and Burroughs (2009) found in their survey and experiment that the fear of death in the context of mortality salience make individuals, especially materialists, form a strong brand complex (Note 21). Ke Xue (2009) also revealed that mortality salience will make people reduce the pursuit of diversification in consumption and buy more of their favorite products and brands (Note 22). Chelsea and Gregory et al. (2020) demonstrated that when infectious diseases cause consumers' disgust and fear, they are more likely to buy products they are familiar with (Note 23).

2.3 Consumption of Uncertain Products

Promotion and products are the scenarios where the companies get closest to the consumers' purchase decisions. The inevitable uncertainty and ambiguity in the process of consumption decision-making mainly come from the uncertainty of the prices and products. Therefore, referring to the choice of Chen Rui and Zheng Yuhuang (2015) (Note 24), this study selects normal scenarios, (namely, probabilistic promotion and new products with functional risks, which respectively reflect the uncertainty of promotion and uncertainty of products,) and explores the impact of mortality salience on preferences for uncertain consumption.

2.3.1 Probabilistic Promotion and Consumption Behavior

Probabilistic promotion is extensively used in sales. Lucky draw gifts or coupons based on a certain amount of purchase in the mall, "another bottle" in the soda bottle cap, and the full amount the products returned to the lucky person during the promotion are all examples of probabilistic promotion. Despite the discounts, consumers are risk averse in nature and hate the uncertainty in the consumption. Therefore, in some cases, probabilistic promotion cannot win the favor of consumers. Goldsmith and Amir (2010) indicated that emphasis on the probability of winning prizes will decrease consumers' enthusiasm to participate in promotion (Note 25). Yan and Muthukrishnan (2014) found that the provision of consolation prizes will also reduce consumers' enthusiasm to participate in probabilistic promotion, because it implies the low probability of winning (Note 26). In addition, the characteristics of consumers also affect the choice of probabilistic promotion. Chen Rui and Zheng Yuhuang (2015) indicated that consumers with higher loneliness will avoid probabilistic promotion (Note 27). Laran and Tsiros (2013) found that the way consumers process information affects the effect of probabilistic promotion. In case the consumer adopts emotion-oriented information processing mode, they will choose probabilistic promotion over fixed discount. In contrast, if the cognitive processing model is adopted, the consumer will choose the opposite (Note 28). It can be seen that the characteristics of consumers, the processing of probabilistic promotion information and the attention to probability are the key to the success of probabilistic promotion. Given that many studies indicate that mortality salience can affect consumers' consumption behavior and cognitive styles, this paper hypothesizes that mortality salience can affect consumers' choice of promotion methods.

2.3.2 New Products and Consumer Behavior

As the best indicator of enterprise innovation, new products bear the dual responsibility of winning profits and competitive advantages for enterprises. However, new products often have a high probability of failure after entering the market, for which the two main reasons are the functional risks of new products and the low acceptance of consumers. In contrast with mature products, new products often adopt more advanced technologies and have novel appearance. And the corresponding risks follow. Ram and Sheth (1989) pointed out that new products cannot avoid the functional risks caused by the uncertainty in new technology application and product testing(Note 29). Focusing on individual cognitive characteristics, Herzenstein et al. (2007) found that promotion-focused consumers are more willing to accept new products than are prevention-focused consumers as the former pay more attention to the positive results of new products, namely, the improvement of functions and performance, while the latter avoid negative results, that is, they avoid buying new products with functional risks (Note 30). Chen Rui and Zheng Yuhuang (2015) focused on the loneliness of consumers. Their study revealed that consumers with high level of loneliness would avoid buying new products (Note 31). This paper holds that the defense mechanism activated by mortality salience also affects consumers' evaluation of new products and the consumption preference for new products relative to traditional products. Therefore, this paper hypothesizes that mortality salience affects consumers' choice of new products.

2.4 General Self-Efficacy and Consumer Behavior

Self-efficacy refers to an individual's confidence in using all his/her knowledge and ability to solve a problem(Note 32). It was first proposed by American psychologist Bandura in 1977. Research indicates that self-efficacy is associated with people's performance in the face of disasters and challenges. In the face of negative situations, people with high self-efficacy do not worry before dealing with the environment, while people with low self-efficacy doubt their coping capacity when facing the pressure and challenges of the environment, so as to aggravate their anxiety and passively deal with the environment with a defensive attitude(Note 33). Self-efficacy also affects consumer behavior in their decision-making. Zhu Ge et al. (2010) found that self-efficacy affects consumers' perceived value of products or services and their consumption intention(Note 34). Su Shu, Xiong Shiqiu and Wu Hongyan (2017) revealed in their study that the consumption style of individuals with high self-efficacy is more oriented towards brand cognition and price-quality balance, that is, they prefer products with higher cost performance, while the individuals with low self-efficacy demonstrate orientation towards price cognition and habitual loyalty(Note 35).

On the basis of Bandura, some scholars divide self-efficacy into special self-efficacy and general self-efficacy. Special self-efficacy mainly refers to an individual's confidence in completing specific tasks and solving specific problems in a specific environment, such as learning self-efficacy, innovation self-efficacy, etc.; in contrast, general self-efficacy refers to an overall self-confidence(Note 36) when dealing with the challenges from multiple stressors, which have an impact on specific cognitive behavior in practice. From the perspective of cognitive behavior, general self-cognition is the premise and general source of confidence that guides individuals to meet and try new things. So it becomes an important basis for individuals' judgment of specific values in consumption

decision-making(Note 37). Therefore, this paper attempts to use general self-efficiency as a moderator to explore the consumption performance of individuals in the face of the disaster of mortality salience.

3. Research Model and Hypotheses

Drawing on the research results of scholars at home and abroad in relevant fields, and based on the existing literature, this study designs the independent variable X = mortality salience, the dependent variable Y = consumption preference for uncertain products (Y1 = choice of promotion methods; Y2 = preference for new products), and the moderator A = general self-efficiency; and constructs the following model and hypotheses:

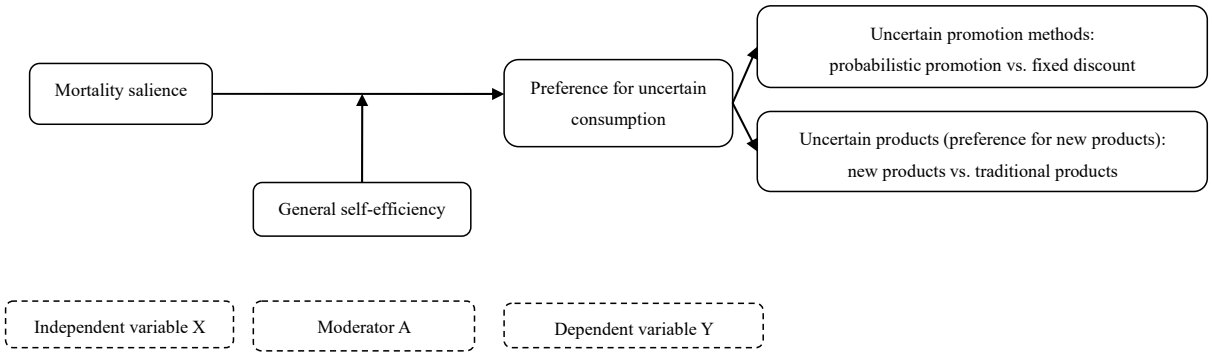

Figure 1. The Research Model

The expected result of this study is to verify the 4 hypotheses proposed on the basis of the data collected from the experiments, namely:

H1-a: Mortality salience has a positive impact on the choice of probabilistic promotion.

H1-b: Mortality salience has a positive impact on the choice of fixed discount.

H2-a: Mortality salience has a positive impact on the choice of new products.

H2-b: Mortality salience has a positive impact on the choice of traditional products.

H3: Self-efficacy has a moderating effect in the process of mortality salience affecting the choice of promotion methods.

H4: Self-efficacy has a moderating effect in the process of mortality salience affecting the preference for new products.

4. Experiment Design and Testing

To verify the above hypotheses, a pre-experiment and 2 formal experiments were designed. The pre-experiment explored the reliability of experimental materials and the relationship between mortality salience and the choice of promotion methods. Experiment 1 tested the relationship between mortality salience and the choice of promotion methods again, with general self-efficacy added as a moderator. Experiment 2 explored the relationship between mortality salience and consumption preference for new products, and, on this basis, examined whether general self-efficacy can be a moderator.

4.1 Pre-experiment

The main purpose of the pre-experiment is to test the reliability of the selection of the copy and image materials for the new product needed in Experiment 2, preliminarily test hypotheses H1-a and H1-b, and explore the impact of mortality salience on the choice of promotion methods.

4.1.1 Process

100 students in the classrooms of China University of Political Science and Law were recruited as subjects in the pre-experiment, who were asked to write their names and student numbers so that they could fill in the questionnaire carefully. The age of the subjects in this experiment was 20-29, among whom 30 were males. Experiment 1 adopted a single factor between-subject design of the mortality salience (the the mortality salience group vs. the control group) . The subjects were randomly divided into the mortality salience group or control group. After answering relevant questions, they were required to choose between the promotion of fixed discounts and promotion of probabilistic discounts in a set of scenarios provided in the questionnaire. The experiment proceeded as follows:

First, the subjects were asked to compare the innovation of two sports headphones of the same brand: one was a bone conduction sports headphone, and the other an ordinary model. The copy for the bone conduction sports headphone was as follows: "This is the latest model with properties such as bone conduction, long battery life and waterproofness. Moreover, it adopts the innovative bone-conduction technology. Compared with other ordinary sports headphones, it is not an in-ear type and can protect eardrums, without the discomfort caused by in-ear headphones. Besides, it guarantees that you can notice surrounding changes during the exercise. However, this product may have risks of sound quality loss and sound leakage due to the unstable innovative technology." The traditional model had the following copy: "This traditional sports headphone has properties such as long battery life and waterproofness. When it is not used, you can hang it around your neck safely and comfortably. Magnetic earbuds will cling to each other, avoiding the entanglement and shake of cables and preventing the headset from dropping. Furthermore, the technology adopted for this product is mature and stable, bringing high-quality sounds during your exercise." Images of the headphones were attached respectively. Then the subjects were asked to answer 3 either-or questions: "Which product do you think is a new product", "Which product do you think is more innovative" and "Which headphone are you more familiar with".

After that, the subjects were randomly divided into the mortality salience group or control group. Then mortality salience was manipulated. Referring to Niu Weihua (2013), we asked the mortality salience group to vividly imagine the scene of their death. At the same time, the control group were asked to vividly imagine their daily life. Both groups were required to answer 2 related open-ended questions: 1 What do you think will happen when you die (for the control group: in your daily life)? 2. How will you feel? (Note 38) Afterwards the subjects were asked to imagine shopping in the supermarket, about to buy a water cup of CNY 90. They were told that there were two methods of promotion: They could buy the cup at a fixed 20% discount; or they could win the water cup by lottery, with a 20% chance to get the water cup for free, and a 80% chance to pay the full price (Liu Wumei, Wang Haizhong, and He Liu, 2014). The subjects were required to choose between the two. Finally, the basic social information of the subjects was filled in, including age, gender, monthly disposable amount, educational level and occupation attributes.

4.1.2 Data Verification Results and Analysis

In this experiment, there were 51 subjects in the mortality salience group and 49 in the control group.

In judging whether the product described in the copy was an innovative product, 95% of the students believed that the bone conduction headphone was a new product, 94% said that the bone conduction headphone was more innovative, and 93% were more familiar with ordinary sports headphones, which is in line with our expectations. So the selection of new product materials was successful.

In this experiment, the independent variable mortality salience and the dependent variable choice of probabilistic promotion are classified variables, so Chi-square test was used to test and analyze the results.

Table 1. Chi-square test for crosstab of mortality salience and choice of promotion

	Choice of promotion				
Mortality salience	Probabilistic promotion	Fixed discount	Total	Chi-square	p
Control group	12	37	49		
Percentage	24.5%	75.5%	100.0%		
Mortality salience group	23	28	51	4.665[a]	0.031
Percentage	45.1%	54.9%	100.0%		
Count	35	65	100		
Percentage	35.0%	65.0%	100.0%		

The minimum expected count in the table is 17.15, greater than 5, and the sample size is 100, greater than 40, so it is considered suitable to use Pearson's Chi-square for test. It can be seen from Table 1 that the result of Pearson's Chi-square test was 4.665, and $p = 0.031 < 0.05$. Therefore, mortality salience results in significant differences in the choice of promotion methods. In the control group, 24.5% of the subjects chose probabilistic promotion and 75.5% chose fixed discount. In the mortality salience group, 45.1% of the subjects chose probabilistic promotion and 54.9% chose fixed discount. The percentage of the subjects choosing the probabilistic promotion in the mortality salience group was 23.6% higher than that in the control group. It can be seen that in the context of mortality salience, consumers prefer probabilistic promotion.

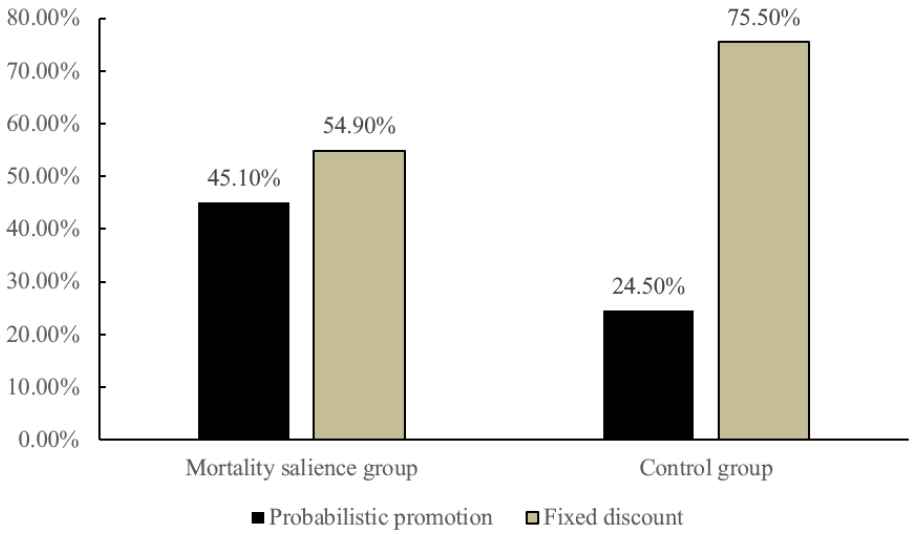

Figure 2. Pre-experiment: descriptive statistics of mortality salience × choice of promotion method

4.2 Experiment 1: The Impact of Mortality Salience on the Choice of Promotion Method (Y1)

The main purpose of Experiment 1 was to test H1-a and H1-b again and test H3, so as to explore the moderating effect of general self-efficiency on the relationship between mortality salience and probabilistic promotion. In addition, the control material for mortality salience was replaced in this experiment, to avoid the difference of results caused by different experimental materials and ensure the accuracy of the conclusions.

4.2.1 Process

Experiment 1 was conducted in the laboratory of China University of Political Science and Law. A total of 142 subjects recruited in the University participated in the experiment, who got a reward after the experiment. In this experiment, the subjects was 18-22 years old, among whom 26 were males. Experiment 2 reproduced Experiment 1, adopted the single factor between-subject experimental design of mortality salience (mortality salience vs. control), and added the moderator general self-efficacy on the basis of the pre-experiment. The experiment proceeded as follows:

First, the subjects were randomly assigned to the mortality salience group or the control group. Then the subjects were asked to fill in a general self-efficacy scale (Schwarzer, Born, 1997) (Note 39), which selected 8 items with factor loading higher than 0.5 from the original 10 items, and conducted the measurement with a 7-point scale. The average of the 8 items was used as the general self-efficiency variable (Cronbach's α= 0.903). Then we manipulated mortality salience referring to Zhou Shuang (2018) (Note 40). The mortality salience group was asked to watch a video of a large truck accident (a large truck out of control rolled over and caused three deaths), while the control group watched a video of pain caused by tooth washing. After watching the video, both groups were required to answer 2 related open-ended questions: 1 What are the above videos and passages about? 2. How are you feeling?

Afterwards the setting of consumption promotion scenarios in Experiment 1 were repeated. The subjects were asked to choose between a fixed discount of 20% and a probabilistic promotion in the form of lottery. Finally, the basic social information of the subjects was filled in, including age, gender, monthly disposable amount, educational level and occupation attributes.

4.2.2 Data Verification Results and Analysis

In this experiment, there were 72 subjects in the control group and 70 in the mortality salience group. Chi-square test was used again in this experiment to analyze the impact of the independent variable mortality salience on the dependent variable choice of probabilistic promotion.

Table 2. Chi-square test for crosstab of mortality salience and choice of promotion

	Choice of promotion				
Mortality salience	Probabilistic promotion	Fixed discount	Total	Chi-square	p
Control group	7	65	72		
Percentage	9.7%	90.3%	100.0%		
Mortality salience group	19	51	70	7.201	0.007
Percentage	27.1%	72.9%	100.0%		
Count	26	116	142		
Percentage	18.3%	81.7%	100.0%		

Then, Chi-square test was carried out on the relationship between mortality salience and choice of promotion methods. Although the materials of the independent variable were replaced, it can be seen from Table 2 that the Chi-square test shows that the mortality salience group prefers to choose probabilistic discount, with Pearson $\chi 2$ (1) = 7.201, p = 0.007 < 0.01, indicating a significant difference in the choice of promotion methods caused by mortality salience. 19 subjects (27.1%) in the mortality salience group chose the probabilistic discount, while only 7 subjects (9.7%) in the control group chose the probabilistic discount. The percentage of the subjects choosing the probabilistic promotion in the mortality salience group was 17.4% higher than that in the control group. This further confirms the conclusion of Experiment 1. In the context of mortality salience, consumers are more inclined to choose the promotion method of probabilistic discount.

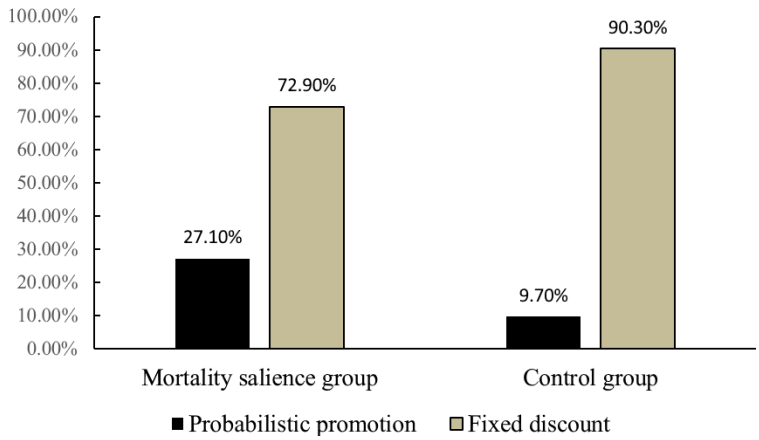

Figure 3. Experiment1: descriptive statistics of mortality salience × choice of promotion method

Next, hypothesis H3 was tested by hierarchical regression to verify whether general self-efficacy has a moderating effect in the relationship between mortality salience and choice of promotion methods. The independent variable and dependent variable were coded. For the independent variables, 1 = mortality salience group and 0 = control group; for the dependent variable, 1 = probabilistic promotion, 0 = fixed discount of 20%. The control variables gender, age, monthly disposable amount, educational level and occupation attributes were put in Layer 1; the independent variables mortality salience (b = 0.183, p < 0.01) and general self-efficacy (b = 0.007, p = 0.802 > 0.05) were put in Layer 2; the moderating term of mortality salience × general self-efficacy was put in Layer 3. It was found that the moderating term (mortality salience × general self-efficiency) was not significant (b = 0.054, p> 0.05, ΔR2=0.006), so the moderating effect of general self-efficiency on the relationship between mortality salience and probabilistic promotion is not significant, and H3 is not tenable.

4.3 Experiment 2: Impact of Mortality Salience on New Product Preference (Y2)

The purpose of Experiment 2 was to test H2-a, H2-b and H4, explore the impact of mortality salience on new product preference, and test whether general self-efficiency has a moderating effect. In Experiment 3, 211 subjects were recruited through the sample service of wjx.cn, who got a reward after the experiment. The sample service can provide rich and diverse samples, so as to obtain good validity of the experiment. A single factor between-subject experimental design of mortality salience (mortality salience vs. dental surgery) was adopted in Experiment 2. The experiment proceeded as follows:

4.3.1 Process

First, the subjects were asked to fill in a general self-efficacy scale(Note 41), which was the same as the scale used in Experiment 1. The average of the 8 items was used as the general self-efficiency variable (Cronbach's α= 0.837). Second, mortality salience was manipulated. The mortality salience group was required to read a piece of traffic accident news, while the control group read a paragraph about the process of decayed tooth extraction. After the reading, both groups were asked to answer 2 related open-ended questions: 1. What are the above videos and passages about? 2. How are you feeling? The answer to each question should be more than 5 words.

Then the subjects were asked to assume that they needed to buy a sports headphone. They would read relevant materials, and choose between 2 models of the same brand. The materials were those tested to be successful in the pre-experiment: the copies of the innovative bone conduction sports headphone and ordinary traditional sports headphone and their photos. After reading the relevant information, the subjects respectively evaluated their liking and purchase intention for the 2 products, which were measured by a 7-point scale where a high score indicates a strong liking. The average of the 2 items was used as the evaluating variable of the new product and the traditional product (for the new product: Cronbach's α=0.912; for the traditional product: Cronbach's α=0.924). Finally, the subjects were asked to fill in their basic social information.

4.3.2 Data Verification Results

In this experiment, the subjects was screened by their seriousness in answering the open-ended questions, and the data of 11 subjects who did not answer carefully were eliminated. Finally, the data of 200 subjects were left, including 94 males. After the screening, there were 98 subjects in the control group and 102 in the mortality salience group.

First, the average of the subjects' liking and purchase intention for the new product and the traditional product was taken as the score of the new product and the traditional product (for the new product, the average = (liking for the new product + purchase intention), and the scoring of the traditional product was the same as that of the new product). Then the score of the traditional product was subtracted from the score of the new product to obtain the preference of the subject for the new product relative to the traditional product (i.e. preference for the new product = score of the new product - score of the traditional product). Afterwards independent sample t-test was conducted on the impact of mortality salience on new product preference, traditional product score and new product score.

Table 3. Significance test of difference resulting from mortality salience in consumption of new products

Variable	Mortality salience group (N=102)	Control group (N=98)	t	p
Preference for the new product	-0.52±2.341	0.204±2.582	-2.078	0.039
Score of the traditional product	5.157±1.35	4.76±1.445	2.007	0.046
Score of the new product	4.637±1.402	4.964±1.554	-1.564	0.119

It can be seen from the above table that mortality salience causes significant difference in preference for the new product, with the p value less than 0.05. In terms of preference for the new product, the mean value of the mortality salience group is -0.52, and the mean value of the control group is 0.204, with t being -2.078, indicating that people are more inclined to avoid buying new products and choose to buy more traditional products in the context of mortality salience (a lower preference for new products). As for the scores of specific products, it can be seen from the above table that mortality salience causes significant difference in the scores of traditional products, with p being 0.046, less than 0.05; the average score of traditional products in the mortality salience group is 5.157, and the average score of the control group is 4.76, with the t being 2.007. It can be seen that in the context of mortality salience, people have a higher liking for familiar and lower risk traditional products and a higher willingness to buy them. However, there is no significant difference in the score of new products resulting from mortality salience.

Next, H3 was tested to verify whether general self-efficiency has a moderating effect in the impact of mortality salience on new product preference. The moderating effect was tested according to the method of Wen Zhonglin (2005). The independent variable was code, where 1 = the mortality salience group and 0 = the control group. First, hierarchical regression analysis was conducted to examine the moderating effect of general self-efficiency on new product preference when gender, age, monthly disposable amount, educational level and occupational attributes were controlled. As shown in Table 4 below, the control variables gender, age, monthly disposable amount, educational level and occupational attributes were put in the Layer 1. The independent variable mortality salience and the moderator general self-efficiency were put in Layer 2. The results indicate that mortality salience can significantly predict the preference for new products ($b = -0.761$, $p < 0.05$), that is, the preference for new products

decreases significantly in the context of mortality salience. At this point, general-self-efficiency can also significantly predict the new product preference (b = 0.556, p < 0.05). The higher the general self-efficiency, the stronger the preference for new products. The moderating term of mortality salience × general self-efficiency was put in the Layer 3. The results reveal that general self-efficiency has a significant moderating effect in the relationship between mortality salience and new product preference (b = -0.968, p < 0.05), and ΔR2=0.024.

Table 4. Regression analysis with new product preference as the dependent variable

	Lay 1 (control variables)		Lay 2 (independent variable + moderator variable)		Lay 3 (moderating term)	
	b	t	b	t	b	t
(Constant)	-1.966		-3.712		-5.489	
Gender	-0.334	-0.936	-0.320	-0.914	-0.342	-0.988
Age	0.129	0.472	0.080	0.298	0.006	0.024
Monthly disposable amount	-0.056	-0.323	-0.115	-0.667	-0.126	-0.740
Educational level	0.321	1.058	0.206	0.683	0.147	0.489
Occupational attributes	0.292	1.564	0.285	1.563	0.322	1.776
Mortality salience			-0.761	-2.207*	4.297	1.889
General self-efficacy			0.556	2.507*	0.972	3.387**
Mortality salience × General self-efficacy (moderating term)					-0.968	-2.250*
R^2	0.025		0.077		0.101	
$\triangle R^2$	0.025		0.052		0.024	
F	1.000		5.376**		5.061*	

*p<0.05

**p<0.01.

To further analyze the moderating effect, a graph of simple slope (Figure 4) was drawn for the moderating effect (M±SD). The slope of the straight line in the figure below reflects the impact of mortality salience on the preference for new products. For people with high self-efficacy, there is a very significant decrease in their preference for new products from the control group to the mortality salience group (simple slope = -1.5425, p < 0.01, and t = -3.1677). For people with low self-efficacy, mortality salience cannot significantly predict their preference for new products. Therefore, the results indicate that the relationship between mortality salience and new product preference is moderated by general self-efficiency. Among them, in the context of mortality salience, consumers with high general self-efficacy demonstrate a more significant decline in their consumption preference for new products, while consumers with low general self-efficacy experience little change.

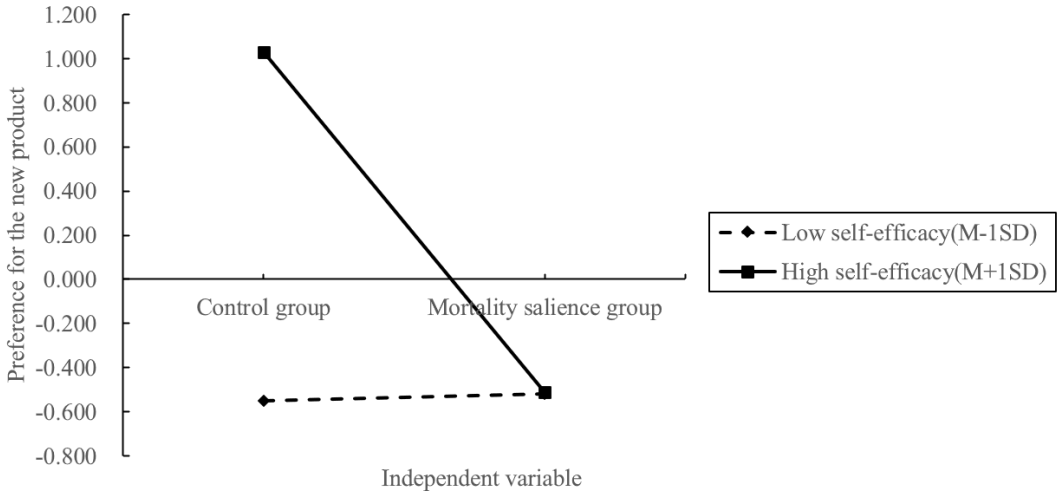

Figure 4. Preference for the new products

5. General Discussion

This study examines the relationship between mortality salience and preference for uncertain consumption. It divides uncertain consumption into uncertain promotion methods (probabilistic promotion vs. fixed discount promotion) and uncertain products (new products vs. traditional products), and tests the moderating effect of general self-efficiency.

The results indicate that as for uncertain promotion methods, consumers are more inclined to choose probabilistic promotion (such as lottery) in the context of mortality salience to determine their payment. This is in line with the conclusions of previous studies: in the context of mortality salience, consumers will choose to "change their thinking" and break the previous rules (Wood, 2010) (Note 42). Consumer hedonism may also play a role. In the context of mortality salience, people are more interested in hedonic consumption (Kasser, Sheldon, 2000) (Note 43). Hedonism can help consumers shift and dispel the fear of death, and probabilistic promotion is undoubtedly more interesting than fixed discount due to the uncertainty it brings. Therefore, consumers will choose probabilistic promotion, which can divert their attention to death. In addition, the change in consumers' information processing mode may also promote this tendency. In the context of mortality salience, people will inevitably experience fear. The strong negative emotion urges consumers to adopt the emotional mode to process the promotion information, so that more consumers choose probabilistic promotion. General self-efficiency failed to play a role in this process, probably because this scenario only presents a promotion method, which will not have an impact on the subsequent life of the consumers and the thinking process in consumers' specific purchase decisions is not involved.

As the promotion method is generally one-time, the uncertainty in that process only affect the current price, without subsequent impact. However, in the face of possible adverse consequences, that is, when the purchase of the specific products will affect subsequent use, the impact of mortality salience on consumers' uncertain choices will be different. The results show that in terms of product uncertainty, consumers' liking and purchase intention for traditional products will increase in the context of mortality salience, and their preference for new products will decrease. General self-efficiency plays a moderating effect in the impact of mortality salience on the preference for new products. For people with high self-efficacy, their preference for new products will decrease significantly in the context of mortality salience. For people with low self-efficacy, mortality salience cannot predict their preference for new products.

The following reasons may underlie the moderating effect of general self-efficiency. In daily consumption scenarios, there are often uncertainties and the accompanying risks. Consumers with low general self-efficiency have low sensitivity threshold for perceived risks, and would try to avoid new products with high uncertainty anyway. Therefore, the stimulation brought by mortality salience will not produce greater avoidance effect. People with high general self-efficiency will further weigh the perceived value and perceived risks of new products in daily consumption scenarios, and will choose new products when the perceived value outweighs the perceived risks. However, in the context of mortality salience, people with high general self-efficacy have a stronger inclination of avoiding uncertainty because of the anxiety and fear brought by death. Therefore, they will decrease their preference for new products, reduce their consumption of new products and choose traditional products.

5.1 Theoretical Contributions

This article provides several unique contributions to the theoretical framework.

First, we expand previous work on TMT and consumer behavior. Previous work has seldom focused on the effects of mortality salience brought to consumer preference of uncertain consumption preference. We provide evidence that morality salience does have effects on consumer preference for uncertainty and consumers will behave differently while facing the uncertainty of price and the uncertainty of products.

Second, we explored deeper by testing the moderating effect of general self-efficacy. Previous work of general self-efficacy limited on what impact it will bring on common consumption scenarios. We found out that people of different general self-efficacy will behave differently in common consumption scenarios, but when they are under the context of mortality salience, most of them will tend to buy traditional products which are less uncertain. This article also provides possible explanation for it.

5.2 Suggestions and Directions for Future Researchers

This article works on a new region and plenty of questions such as mediators and boundary condition in this region are to be explored. We will discuss two of the questions here.

First, does the choice of mortality salience materials affect the attitude of consumers? The mortality salience materials chose by this study mainly focus on the emergencies, such as sudden car accidents, which will greatly emphasize the uncertain feeling of consumers. However, if different materials were presented such as natural death

which can reduce, effects presented in this paragraph might become different. Future research can explore deeper and explain more insightful on this.

Second, this paper discusses the impact of mortality salience on uncertain promotion methods and uncertain products, which makes the dependent variables seem more scattered. In fact, this paper hopes to capture the impact of mortality salience through two different consumption scenarios: price and product. Of course, there are many other consumptions phenomena that can present "uncertain consumption preferences", such as uncertain waiting time for express delivery, uncertain curative effect of drugs, etc. This article cannot exhaust the phenomenon of uncertain consumption, nor can it ensure that mortality salience will have a specific impact on it. Future research can explore the impact of mortality salience on other uncertain consumption phenomena.

5.3 Suggestions for Managers

For enterprises, in the context of mortality salience such as epidemics, floods and serious traffic accidents, enterprises can stimulate consumption by changing promotion methods and using more uncertain probabilistic promotions, such as obtaining gifts and discounts through lottery. Such promotional methods can enhance the entertainment of sales, giving people happiness and excitement specifically brought by uncertainty and providing them with an environment that makes it possible to temporarily escape from the fear of death. As a result, the promotional activity will become more successful.

However, as for the launch of new products, enterprises should be careful and cautious in the context of mortality salience. The purchase of specific products often involves the subsequent experience of consumers. Under the fear of death, consumers are willing to give up the convenience brought by new products, magnifying the inevitable possible technical defects and distinctive forms of new products. They will reduce their tolerance to the uncertainty that affects their lives and increase the preference for traditional and familiar products which can ensure their stable product experience during subsequent use. The processes involving the subsequent behaviors of consumers, such as the arrival of transportation and subsequent product maintenance, should also avoid uncertainty. As a result, the enterprise can create a stable environment for consumers' products and related consumption experience under the context of mortality salience.

6. Data Collection Information

Pre-experiment was conducted in a marketing class in the classroom of China University of Political Science and Law in October 2021. Experiment 1 was conducted on the computers in the laboratory of China University of Political Science and Law in December 2021. Different group of tests are presented on different computers and students were randomly divided into 2 groups and were asked to take the experiment on different computers. Experiment 2 was run on wjx.cn, a website which could recruit test takers in January 2022. All data were analyzed by SPSS 25.0. Moderating effect is analyzed by SPSS 25.0 and we used Process 3.3 as a plug-in unit. The details of the experiments are provided at the end of the article.

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Appendix

Appendix A. Death Salience-related Materials

1. Death salience-related materials in the pre-experiment

Death group:

Please think about your death, and try to vividly imagine what your death will be like. Then, answer the following two questions in the space given below (at least 10 words required for each question):

(1) What do you think will happen when you die? What will you feel when you die? (>10 words)

(2) How do you feel when you think about your death? (>10 words)

Control group:

Please think about your one-day life, and try to vividly imagine your daily life. Then, answer the following two questions in the space given below (at least 10 words required for each question):

(1) What is a typical day for you? (>10 words)

(2) How do you feel on a typical day? (>10 words)

2. Death salience-related materials in experiment 1

Death group:

Please watch video 1 on the desktop (! Four passersby were hit and died due to the drifting and rollover of an uncontrolled heavy truck in Chongqing_bilibili). Then, read the paragraph below.

On June 25, 2019, the *Lancet*, the world's top medical journal, published a research report titled "Mortality, morbidity, and risk factors in China and its provinces, 1990 - 2017: a systematic analysis for the Global Burden of Disease Study 2017". In this report, "road injury", as a sole non-disease cause, was included in the top 10 factors leading to the death of Chinese people. In 2019, there were 274,600 traffic accidents and 62,700 deaths caused by such accidents in China. According to the World Health Organization, about 1.35 million people worldwide die of traffic accidents each year. Besides, about 20 million to 50 million people suffer non-fatal injuries, many of whom become disabled finally.

Please answer the following questions after watching the video and reading the paragraph above.

(1) What do the above video and paragraph tell?

(2) How do you feel?

Control group:

Please watch video 2 on the desktop (Why is teeth cleaning so cool__bilibili). Then, answer the following questions.

(1) What does the above video tell?

(2) How do you feel about it?

3. Death salience-related materials in experiment 2

Death group:

Please answer the following questions after reading the paragraph below. (Each answer shall have at least 5 words)

On May 22, a man in Dalian felt utterly dispirited due to an investment failure and wanted to seek revenge against others. At 11:40, the man drove a car to an intersection, suddenly raised the speed from 0 km/h to 108 km/h within 7 seconds, and willfully hit passersby when the traffic light was still red and passersby were walking on the zebra crossing, killing five people and wounding another five. (A photo for the accident)

Control group:

Please answer the following questions after reading the paragraph below. (Each answer shall have at least 5 words)

The process of removing tooth decay:

1. Take an X-ray of the oral cavity.

2. Anaesthesia.

3. Extract a tooth with dental forceps. If tooth decay results in a severe loss of and damage to the dental crown, making it difficult to use the dental forceps directly, a proper tool is required to pry the tooth.

4. Use apical forceps to remove dental tissues.

5. For the residual root of a decayed tooth near a gum, cut the gum open, lift the mucoperiosteal flap, remove the partial bone substance and extract the residual root.

Appendix B. Dependent Variable-related Materials in Experiments

1. Scenario options in the pre-experiment and experiment 1

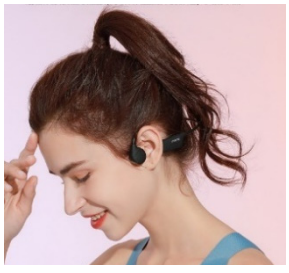
Imagine that you are shopping in a supermarket and want to buy a cup. Its price is RMB 90. There are two promotion methods. The first option is a promotion with a fixed discount of 20%. The second option is to decide the cup price by a prize draw. There is a 20% probability that a customer may gain the cup free of charge, and an 80% probability that a customer needs to make full payment to gain the cup. Please choose one from the above two options. ( )

A. Gain the cup with a fixed discount of 20%.

B. Decide the cup price by a prize draw. There is a 20% probability that a customer may gain the cup free of charge, and an 80% probability that a customer needs to make full payment to gain the cup.

2. Product options in experiment 2

Sports headphone model A: This is the latest model with properties such as bone conduction, long battery life and waterproofness. Moreover, it adopts the innovative bone-conduction technology. Compared with other ordinary sports headphones, it is not an in-ear type and can protect eardrums, without the discomfort caused by in-ear headphones. Besides, it guarantees that you can notice surrounding changes during the exercise. However, this product may have risks of sound quality loss and sound leakage due to the unstable innovative technology.



Sports headphone model B: This traditional Sony product has properties such as long battery life and waterproofness. When it is not used, you can hang it around your neck safely and comfortably. Magnetic earbuds will cling to each other, avoiding the entanglement and shake of cables and preventing the headset from dropping. Furthermore, the technology adopted for this product is mature and stable, bringing high-quality sounds during your exercise.

Please evaluate the above sports headphones and mark a proper circle with "√". 1 means the great objection to a statement, and 7 means the great consent to a statement.

	1	2	3	4	5	6	7
How much do you like Product A?	○	○	○	○	○	○	○
To what extent are you willing to buy Product A?	○	○	○	○	○	○	○
How much do you like Product B?	○	○	○	○	○	○	○
To what extent are you willing to buy Product B?	○	○	○	○	○	○	○

Appendix C. Scale for Experiments

1. General Self-Efficacy Scale

The following 10 sentences are your general opinions about yourself. Please choose the proper degree of your consent to a statement from 7 options based on your actual feelings (the degree of consent increases from the left to the right), and mark a proper circle with "√". There are no "right or wrong" answers.

		1	2	3	4	5	6	7
1	I can always manage to solve difficult problems if I try hard enough.	○	○	○	○	○	○	○
2	If someone opposes me, I can find the means and ways to get what I want.	○	○	○	○	○	○	○
3	It is easy for me to stick to my aims and accomplish my goals.	○	○	○	○	○	○	○
4	I am confident that I could deal efficiently with unexpected events.	○	○	○	○	○	○	○
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.	○	○	○	○	○	○	○
6	I can solve most problems if I invest the necessary effort.	○	○	○	○	○	○	○
7	I can remain calm when facing difficulties because I can rely on my coping abilities.	○	○	○	○	○	○	○
8	When I am confronted with a problem, I can usually find several solutions.	○	○	○	○	○	○	○