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Coping efficacy is associated with the domain specificity in risk-taking behaviors during the COVID-19 pandemic

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ABSTRACT

The current study is to explore the associations between the threat to life and risk-taking behaviors across different domains during the coronavirus disease (COVID-19), and the role of the perceived threat and coping efficacy in these associations based on protection motivation theory. This study conducted an online survey on 2983 participants from 30 provinces in China. It found that people's risk-taking behaviors in the wake of the COVID-19 pandemic could be divided into stimulating risk-taking (SRT) behaviors and instrumental risk-taking (IRT) behaviors. The exposure level to the COVID-19 pandemic was negatively related to SRT behaviors in natural/physical, gambling, safety, moral, and reproductive domains, but not related to IRT behaviors in financial and corporation/competition domains. Two parallel routes were found in domain-specific risk-taking behaviors when people were faced with a life-threatening epidemic. Specifically, perceived threat consistently mediated the positive relationship between exposure level and risk-taking behaviors across domains. In contrast, coping efficacy mediated the negative relationship between exposure level and SRT behaviors but positive associations with IRT behaviors. These findings indicated that coping efficacy, rather than perceived threat is the factor that explains the people's domain-specific risk-taking behaviors in the context of the epidemic. The study holds implications for emergency policy-making that targets disaster risk reduction by increasing the public coping efficacy, which could prevent unnecessary SRT behaviors and improve necessary IRT behaviors in business and investment for economic recoveries.

1. Introduction

The outbreak of the coronavirus disease (COVID-19) confronted the world with an unprecedented life-threatening disaster unlike any experienced before, and it had a serious impact on physical and psychological health (e.g. Refs. [1,2], as well as people's risk-taking behaviors in many domains [3,4]. Faced with life-threatening disasters, exposure level has been often used to measure the degree of the current disaster [5]. Previous studies have found that the exposure level to life-threatening disasters is closely associated with individual risk-taking behaviors, but no consensus was reached. On the one hand, high exposure levels to life-threatening disasters led to more risk aversion in the economic domain after the 9/11 terrorist attacks [6] and the risky gambling domain after floods and earthquakes (Cameron & Shah, 2015). On the other hand, some studies have found that individuals with high exposure levels tend to be more risk-loving in the health domain after the 9/11 terrorist attacks (e.g. Refs. [7,8], and during COVID-19 [9]. These inconsistent findings may be modulated by risk context or domain, that is, the domain specificity in risk-taking behaviors. The present study aimed to explore whether people's risk-taking behaviors are domain specific in the wake of the COVID-19 pandemic.

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Domain-specific risk-taking behaviors refers to the risk preference in a particular content domain that may be influenced by domain-specific risk factors [10]. Researchers have mainly used the self-reported scales to measure domain-specific risk-taking, and the Domain-specific Scale of Risk-taking (DOSPRT) is widely used to assess the domain specificity in risk-taking behaviors (e.g., Refs. [11–13]). Wang et al. [14] developed the DOSPRT into a Domain-specific Scale of Risk-taking Across Seven Domains (DOSPRT-7). The seven domains are the natural/physical, gambling, safety, moral, reproduction, financial, and corporation/competition domains. It is worth mentioning that the reproduction subscale of the DOSPRT-7 focuses on tradeoffs of financial reward with a risk of producing infertility [14], such as “To take part in medical experiments that may affect fertility in exchange for high remuneration”. So far, however, the classification of risk domains is unclear theoretically, and some scholars doubt the DOSPRT has no theoretical basis in domain selection [15]. Focusing on the theories of risk-taking behaviors’ domain division, Zaleskiewicz [16] has ever categorized risk-taking behaviors into stimulating risk-taking (SRT) and instrumental risk-taking (IRT) according to the motives people hold when engaging in risky behaviors [17]. SRT represents the tendency to take risks to experience strong emotional excitement, while IRT reveals the tendency to take risks to achieve certain goals (Zaleskiewicz, 2001). In the present study, the first objective is to explore the associations between exposure levels to the COVID-19 pandemic and people’s risk-taking behaviors across domains by using DOSPRT-7. Meanwhile, a large sample and cluster analysis methods were conducted to test the rationale of the theoretical framework proposed by Zaleskiewicz [16]; which may provide some theoretical basis for domain selection in the DOSPRT-7.

The second objective is to explore what is associated with the domain specificity in risk-taking behaviors in the wake of the COVID-19 pandemic. According to protection motivation theory (PMT [18], individual behavior in response to health-related risk is significantly dependent on one’s risk perception which involves two appraisal processes. The first is threat appraisal, which consists of perceived vulnerability (probability of experiencing possible harm from the threat) and perceived severity (degree of harm). The second is coping appraisal, which consists of response efficacy (the belief that the response will successfully reduce the threat) and self-efficacy (the belief that one can effectively perform a response and thus protect oneself) [18]. In the wake of COVID-19, people reported a high level of risk perception in Chongqing of China, which was impacted by the population demographic characteristics, such as age, gender, income, and media use [19]. Furthermore, based on PMT, a recent study by Tsoy et al. [20] has found risk perception indexed by the perceived threat and coping efficacy were influenced by social media exposure during COVID-19, and they pointed out that social media is useful in achieving better preventive results among people by forming peoples’ risk perceptions. So far, few studies tried to explore the relationship between perceived threat, coping efficacy, and domain specificity in risk-taking behaviors in the wake of COVID-19 from the perspective of PMT.

In terms of the relationship between threat appraisal and domain specificity in risk-taking behaviors, previous studies indicated that it may be positive and consistent across domains. To be specific, researchers found that fear of death leads individuals to acquire more risky behaviors [21]. During COVID-19, increased risk perception is associated with higher risk-taking behaviors in the health domain, such as accepting the vaccine [22], accepting the government’s implemented measures to control COVID-19, and taking more precautionary behaviors [23]. Moreover, risk perception significantly affects social distancing behaviors in a positive way [1,24]. Alternatively, terror management theory [25] implies that risk-taking behaviors increases in response to existential threats as a defensive reaction. Based on terror management theory, studies found that mortality salience can lead individuals to more risk-taking behaviors to boost self-esteem. Fear of death induces an involuntarily focus on positive emotional information [26], such that individuals actively participate in more risky behaviors [21].

In contrast, previous studies suggested that the relationship between coping efficacy and risk-taking behaviors may be domain-specific. In the SRT, such as the health domain, coping efficacy was found to be a significant predictor of intentions for safe sex among adolescents [27]. Moreover, the research found that adults with low levels of coping efficacy tend to exhibit problematic eating behaviors [28]. However, this relationship seems inconsistent when domains of IRT are discussed. Self-efficacy is regarded to be strongly correlated to goals. Individuals with high levels of efficacy beliefs set higher goals and tend to be more committed to the achievement of their goals [29]. In such goal-oriented risk domains, a strong coping efficacy may motivate individuals to take more risk-taking behaviors to achieve their goals. For example, in the financial domain, coping efficacy was found to be closely associated with more aggressive actions in highly risky settings [30]. Based on PMT, the above literature indicated that compared with the perceived threat, coping efficacy may be the more important and key factor to explain the domain specificity in risk-taking behaviors. The current study is intended to investigate the mechanisms underlying the domain relationship between exposure levels to COVID-19 and risk-taking behaviors across domains from the perspective of PMT.

To sum up, by examining whether domain-specificity in risk-taking behaviors exists in the wake of coronavirus disease and how exposure levels to COVID-19 and risk-taking behaviors link to each other across different domains from the perspective of PMT, this study can contribute to our theoretical understanding of domain-specificity in risk-taking behaviors and practical implications for managing risk-taking behaviors in terms of the domain. We hypothesize that (1) people have domain-specific risk-taking behaviors in the wake of the COVID-19 pandemic with a different relationship between exposure to COVID-19 and risk-taking behaviors across different domains. Furtherly, these domains could be clustered into SRT and IRT, as proposed by the risk-taking behaviors categories of Zaleskiewicz [16]. (2) Based on PMT, two parallel routes occur between COVID-19 exposure level and risk-taking behaviors. Specifically, perceived threat mediates the positive relationship between exposure level and risk-taking behaviors, whose effects are consistent across domains. In contrast, coping efficacy mediates the negative relationship between them, whose effect may be domain-specific. Fig. 1 illustrates the overall theoretical framework.
2. Method

2.1. Participants

The current study used the online survey platform Sojump (https://www.wjx.cn) for data collection from March 3 to March 13, 2020, during the early peak of the COVID-19 outbreak in China. The platform was also used in other studies and deemed applicable to data collected during the COVID-19 pandemic [31]. This online survey platform is very convenient, it can help researchers send questionnaires in different ways, such as generating links and QR codes for private and group sending, embedding WeChat official account/applet sending, sending one-to-one via message/email, and system docking through customized link parameters. In the present study, we mainly used the first two ways to send and collect data, which largely improved our efficiency. Furthermore, WeChat has been widely used in China, and it is similar to WhatsApp in western countries. Every Chinese often attends many different WeChat groups, such as family groups, shopping groups, work groups, community groups, and so on. Moreover, every WeChat group could contain 500 people at most. With the help of WeChat groups, we collected data more quickly. To be specific, when the online survey platform Sojump generates links and QR codes for group sending, then we send the links or QR to the WeChat group. In addition, we recruited some students from different provinces to help us to send the questionnaire and collect data, which guaranteed that complete data collection from 30 provincial-level administrative divisions in a short time. Each participant signed an informed consent form before accessing and completing the questionnaire and received five RMB compensation after the survey via the online survey platform automatically issued. The length of time for completing the entire questionnaire was approximately 15 min. The study design and procedures were approved by the Research Ethics Committee of the Central University of Finance and Economics.

A total of 3455 Chinese participants from 30 provincial-level administrative divisions completed the survey. A total of 472 participants were excluded because their data did not meet the requirements (average answer time was less than 200 ms per question or selected the same answer for each question). Missing data in responses are non-existent, because on the online survey platform Sojump, only after the subjects have filled in all the items can they successfully submit the questionnaire. The final sample in the current study comprised 2983 participants. Participants were primarily female (59.2%, n = 1766) and 18–40-year-olds (84%, n = 2504). Moreover, there were 736 high school and under (24.7%), 778 colleges (26.1%), 1177 bachelor’s degrees (39.5%), and 292 master’s degrees and high (9.8%). Additionally, most of the participants’ income was under 7000 RMB/month (83.7%, n = 2497). Occupation of participants was varied, such as student (22.2%, n = 663), sales (11.4%, n = 339) and production (8.6%, n = 257). Other details of demographic variables can be seen in Table 1.

| Characteristic | N  | %  | Characteristic | N  | %  |
|----------------|----|----|----------------|----|----|
| Age            |    |    | Occupation     |    |    |
| Under 18       | 85 | 2.8 | Student        | 663 | 22.2 |
| 18–25          | 1085 | 36.4 | Production    | 257 | 8.6 |
| 26–30          | 707  | 23.7 | Sales          | 339 | 11.4 |
| 31–40          | 712  | 23.9 | Marketing/Public Relations | 120 | 4.0 |
| 41–50          | 281  | 9.4  | Customer Service | 135 | 4.5 |
| 51–60          | 95   | 3.2  | Administration/Logistics | 177 | 5.9 |
| over 60        | 18   | 0.6  | Human resources | 88  | 3.0 |
| Education      |     |     | Occupation     |    |    |
| High school and under | 736 | 24.7 | Office work | 79  | 2.6 |
| College        | 778  | 26.1 | Research and Development | 131 | 4.4 |
| Bachelor’s degree | 1177 | 39.5 | Management    | 84  | 2.8 |
| Master’s degree and higher | 292 | 9.8  | Teacher       | 93  | 3.1 |
| Income (RMB/month) |      |      | Consulting     | 18  | 0.6 |
| Below ¥3000    | 1262 | 42.3 | Professionals | 64  | 2.1 |
| ¥3000–¥5000    | 729  | 24.4 | Others         | 656 | 22.0 |
| ¥5000–¥7000    | 506  | 17.0 | Administration/Logistics | 177 | 5.9 |
| ¥7000–¥10,000  | 323  | 10.8 |              |    |    |
| Over ¥10,000   | 163  | 5.5  |              |    |    |
2.2. Measures

2.2.1. Risk-taking behaviors

The Risk-taking Across Seven Domains (DOSPERT-7) scale was used in the current study to evaluate the risk-taking behaviors across domains [14]. The full scale (α = 0.95) consisted of seven domains, namely, natural/physical (e.g., periodically engaging in dangerous sports, such as mountain climbing or sky diving; α = 0.90), gambling (e.g., spending a week's income at a casino; α = 0.95), safety (e.g., regularly eating high-cholesterol food; α = 0.83), moral (e.g., cheating on an exam; α = 0.91), financial (e.g., investing 10% of annual income in a new business venture; α = 0.89), cooperation/competition (e.g., physically intervening between two friends aggressively pushing each other to prevent a fight; α = 0.77), and reproduction (e.g., participating in a medical study that pays a large amount of money but increases the chance of sterility; α = 0.86). All items were rated using a seven-point Likert-type scale ranging from 1 (very unlikely) to 7 (very likely). The ratings were averaged to represent risk-taking behaviors in each domain.

2.3. Exposure level to COVID-19

The objective variable of the cumulative number of confirmed cases was referred to as a key COVID-19 severity indicator and was recommended to represent the exposure level to COVID-19 [32]. The current study used the cumulative number of confirmed cases (March 2nd, 2020) as the exposure level based on information acquired from the National Health Commission website, which is the most authoritative channel for COVID-19-related information in China. Hubei province is the epicenter, and it had 67,217 cumulative confirmed cases on March 2nd, 2020. Table 2 provides other provinces’ cumulative confirmed cases and the distance from the epicenter Wuhan. The cumulative number of confirmed cases was correlated with the distance from the COVID-19 epicenter Wuhan in Hubei province (calculated by distance from each provincial city to Wuhan in kilometers; r = −0.65, p < 0.001).

2.4. Perceived threat

The study adapted the Perceived Threat Questionnaire based on risk perception theory by Slovic [33] to measure individual perceived threats posed by COVID-19. Initially, the full questionnaire consisted of six items. Four items reflected perceived vulnerability, such as “I feel very close to the pandemic in Wuhan” (loading = 0.81), “I keep monitoring closely COVID-19 related information released by the authorities” (loading = 0.34), “I have a great deal of uncertainty about when the pandemic will end” (loading = 0.76), and “I am worried about the increase of imported COVID-19 cases” (loading = 0.71). The other two items reflected perceived severity, namely, “I think the COVID-19 pandemic in China is very serious” (loading = 0.76) and “I think the COVID-19 pandemic is very serious abroad” (loading = 0.74). All items were rated using a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The item “I keep monitoring closely COVID-19 related information released by the authorities” was excluded due to its low loading number (below 0.70). In total, the study utilized five items to represent the perceived threat. The ratings were averaged to obtain the overall perceived threat score (α = 0.83) for the present study.

2.5. Coping efficacy

The Coping Efficacy Questionnaire was adapted from the Perceived Protection Efficacy Questionnaire used during the Ebola outbreak [34]. The full questionnaire consisted of four items. Two items reflected self-efficacy: “I believe that I can effectively cope with the COVID-19 pandemic” (loading = 0.86) and “I believe that we can effectively cope with the COVID-19 pandemic” (loading = 0.91). The two other items reflected response efficacy: “I think the COVID-19 pandemic will be effectively controlled” (loading = 0.88) and “I feel optimistic about the pandemic” (loading = 0.88). All items were rated using a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The ratings were averaged to obtain the overall coping efficacy score (α = 0.91).

Table 2

| Province   | N   | Number of Cases | Distance from the epicenter (km) | Province   | N   | Number of Cases | Distance from the epicenter (km) |
|------------|-----|-----------------|---------------------------------|------------|-----|-----------------|---------------------------------|
| Hubei      | 399 | 67,217          | 0.00                            | Fujian     | 132 | 296             | 914.64                          |
| Guangdong  | 294 | 1350            | 986.52                          | Guangxi    | 83  | 252             | 1207.73                         |
| Henan      | 252 | 1272            | 509.90                          | Shaanxi    | 33  | 245             | 731.70                          |
| Zhejiang   | 85  | 1213            | 752.04                          | Yunnan     | 22  | 174             | 1550.15                         |
| Hunan      | 71  | 1018            | 344.83                          | Hainan     | 4   | 168             | 1563.77                         |
| Anhui      | 77  | 990             | 389.44                          | Guizhou    | 15  | 146             | 1043.67                         |
| Jiangxi    | 63  | 935             | 355.09                          | Tianjin    | 108 | 136             | 1139.07                         |
| Shandong   | 248 | 758             | 842.34                          | Shaxi      | 155 | 133             | 937.98                          |
| Jiangsu    | 162 | 631             | 543.09                          | Liaoning   | 72  | 125             | 1791.53                         |
| Chongqing  | 33  | 576             | 868.27                          | Jilin      | 59  | 93              | 2087.96                         |
| Sichuan    | 78  | 538             | 1146.17                         | Gansu      | 20  | 91              | 1382.31                         |
| Heilongjiang| 38  | 480             | 2355.67                         | Xinjiang   | 7   | 76              | 3269.11                         |
| Beijing    | 187 | 414             | 1156.01                         | Neimenggu  | 39  | 75              | 1373.70                         |
| Shanghai   | 93  | 338             | 834.20                          | Ningxia    | 23  | 74              | 1470.23                         |
| Hebei      | 131 | 318             | 894.60                          |           |     |                 |                                  |
2.6. Data analysis

Data were analyzed using SPSS 26.0, and structural models were used for partial least squares structural equation modeling (PLS-SEM) in Smart PLS GmbH 3.3, which is frequently used for non-normal data analysis [35]. The number of cases across provinces has great variances and conforms to the non-normal distribution of the present study. Bootstrapping was used to test the significance of the indirect effects. The current study generated parameter estimates of indirect effects and corresponding confidence intervals using 5000 random samples. Moreover, hierarchical agglomerative cluster analysis with recommended between-groups linkage method and the squared Euclidean distance measure [36] was conducted to explore whether different domains of risk-taking behaviors in the wake of COVID-19 could be grouped into several homogeneous clusters, such as the SRT and IRT which proposed by Zalekiewicz [16]. If these two categories of risk-taking behaviors across domains exist, we would create two new variables by averaging the ratings of consisting domains and labeling them as SRT and IRT, respectively. Spearman correlation and structural models of the exposure level to COVID-19, perceived threat, coping efficacy, as well as risk-taking behaviors (SRT and IRT) would be examined.

3. Results

3.1. Clustering of risk-taking behaviors in the wake of COVID-19

The results of hierarchical clustering usually include the agglomeration schedule and the dendrogram. The agglomeration schedule showed how the variables were progressively clustered stage by stage. The coefficients displayed the distance between the two clusters being combined (the larger the distance is, the less similar they are). When the first large increase in coefficient values appeared, the clusters being grouped were becoming heterogeneous, which could be a good time to stop the next clustering stage before the clusters become too dissimilar. In the present study, Table 3 shows the agglomeration schedule —— how the risk-taking behaviors across domains were progressively clustered stage by stage. Notably, the first noticeable jump appeared between stages 5 (coefficients = 8648.75), and 6 (coefficients = 13329.03) suggesting that the clustering after stage 5 should be eliminated. This result was also reflected in the dendrogram (see details in Fig. 2). The vertical lines represented the clustering stages as the agglomeration schedule displays [36]. Based on the coefficient change (difference = 4680.275 between stages 5 and 6), a cut-off line was made before stage 6. Fig. 3 shows the final hierarchical agglomerative clusters, especially, the risk-taking propensity including the natural/physical domain, gambling domain, safety domain, moral domain, and reproduction domain formed a cluster (Cluster 1). The financial domain and cooperation/competition domain of risk-taking formed another cluster (Cluster 2). These two clusters across seven domains were consistent with categories of risk-taking behavior by Zalekiewicz [16]; to be specific, the natural/physical, gambling, safety,

| Stage | Cluster Combined | Coefficients | Stage Cluster First Appears | Next Stage |
|-------|------------------|--------------|-----------------------------|-----------|
|       | Cluster 1        | Cluster 2    | Cluster 1                   | Cluster 2 |
|       | 3424.250         | 5336.375     | 6664.625                    | 6802.000  |
|       | 8648.750         | 13329.025    | 0                           | 0         |

Table 3: Agglomeration schedule.

Gambling domain
Moral domain
Natural/physical domain
Safety domain
Reproduction domain
Financial domain
Cooperation/competition domain

Fig. 2. Dendrogram with an added line suggesting the stopping point during clustering.
moral, and reproduction domains belong to SRT, while the financial and corporation/competition domains belong to IRT [17]. SRT represents the tendency to take risks to experience strong emotional excitement and is correlated with the health, gambling, ethical, and recreational risk domains. IRT reveals the tendency to take risks to achieve certain goals and is connected to investment and social domains [16].

3.2. Exposure level and risk-taking behaviors across domains

Correlation analysis indicated that exposure level to COVID-19 was negatively related to SRT ($r = -0.13, p < 0.001$) in all five domains, namely, natural/physical, gambling, safety, moral, and reproductive domains ($p < 0.001$; see details in Table 4). On the contrary, exposure level to COVID-19 was non-significantly related to IRT ($r = -0.01, p > 0.05$), namely, financial and corporation/competition domains ($p > 0.05$).

3.3. Exposure level, perceived threat, coping efficacy, and risk-taking behaviors

Table 4 presents the correlations among the main variables. The results indicated that exposure level was negatively related to all domains of risk-taking behaviors except for financial and corporation/competition domains ($p < 0.001$). In other words, exposure level was only negatively correlated to SRT ($r = -0.13, p < 0.001$) instead of IRT ($r = -0.01, p > 0.05$). In addition, the perceived threat was positively correlated to SRT and IRT. Lastly, coping efficacy was negatively correlated to SRT ($r = -0.37, p < 0.001$) but positively correlated to IRT ($r = 0.11, p < 0.001$).

Correlation analysis revealed that exposure level to COVID-19 was non-significantly associated with IRT. However, the specific indirect effects between the two variables could still be examined in the case of potential suppression effects, which may obscure the in-

![Fig. 3. The final results of hierarchical clustering with two clusters.](image)

| Variables                  | M   | SD  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Exposure level             | 9553.81 | 22666.50 |   |     |     |     |     |     |     |     |     |     |     |     |
| Perceived threat          | 2.96  | 0.99 | 0.12*** |     |     |     |     |     |     |     |     |     |     |     |
| Coping efficacy           | 3.87  | 0.98 | 0.10*** | 0.05*** |     |     |     |     |     |     |     |     |     |     |
| Natural/physical domain   | 2.77  | 1.56 | -0.12*** | 0.10*** | -0.28*** |     |     |     |     |     |     |     |     |     |
| Gambling domain           | 2.29  | 1.60 | -0.17*** | 0.08*** | -0.39*** | 0.71*** |     |     |     |     |     |     |     |     |
| Safety domain             | 3.13  | 1.48 | -0.06*** | 0.26*** | -0.20*** | 0.53*** | 0.59*** |     |     |     |     |     |     |     |
| Moral domain              | 2.33  | 1.47 | -0.13*** | 0.18*** | -0.41*** | 0.57*** | 0.70*** | 0.67*** |     |     |     |     |     |     |
| Reproduction domain       | 2.98  | 1.51 | -0.11*** | 0.22*** | -0.25*** | 0.56*** | 0.56*** | 0.51*** | 0.60*** |     |     |     |     |     |
| Financial domain          | 3.41  | 1.55 | -0.03 | 0.28*** | -0.03 | 0.37*** | 0.39*** | 0.47*** | 0.44*** | 0.41*** |     |     |     |     |
| Corporation/competition   | 4.21  | 1.32 | 0.02 | 0.28*** | 0.27*** | 0.12*** | 0.07*** | 0.28*** | 0.10*** | 0.22*** | 0.43*** |     |     |     |
| Stimulating risk-taking    | 2.70  | 1.27 | -0.13*** | 0.21*** | -0.37*** | 0.82*** | 0.84*** | 0.80*** | 0.83*** | 0.79*** | 0.49*** | 0.19*** |     |     |
| Instrumental risk-taking   | 3.81  | 1.23 | -0.01 | 0.32*** | 0.11*** | 0.30*** | 0.29*** | 0.45*** | 0.34*** | 0.38*** | 0.89*** | 0.78*** | 0.42*** |     |

*`p < 0.05, **p < 0.01, ***p < 0.001.`*
fluence of specific mediators [37,38]. Therefore, the study continued to individually examine the indirect effects of the perceived threat and coping efficacy as mediators of the relationship between exposure level and forms of risk-taking behaviors using PLS-SEM by SmartPLS. Tables 5 and 6 provide the direct and indirect effects of the structural models on SRT and IRT after controlling for covariates (i.e., age, gender, income, educational level, and occupation), respectively. Moreover, Figs. 4 and 5 show the structural models among exposure level perceived threat, coping efficacy, and SRT and IRT. These findings showed that perceived threat mediated the positive relationship between exposure level and risk-taking behaviors on both SRT and IRT. In contrast, coping efficacy mediated the negative relationship between exposure level and SRT behaviors but positive associations with IRT behaviors. The model explained 28.8% variance in SRT and 13.3% variance in IRT.

4. Discussion

The purpose of this study is to explore the associations between the threat to life and risk-taking behaviors across different domains under the disaster of the COVID-19 pandemic, and the possible explanation behind it from the perspective of PMT. The findings showed that domain-specificity of risk-taking behaviors does exist in the context of the COVID-19 pandemic. People showed increased

**Table 5**
Indirect and direct effects in the structural model of stimulating risk-taking.

| Relationships among variables | β   | t    | p    |
|-------------------------------|-----|------|------|
| Direct effects                |     |      |      |
| Coping efficacy → Stimulating risk-taking | -0.25 | 14.61 | < 0.001 |
| Perceived threat → Stimulating risk-taking | 0.32 | 19.51 | < 0.001 |
| Exposure level → Stimulating risk-taking | -0.15 | 8.78  | < 0.001 |
| Exposure level → Coping efficacy | 0.11 | 6.42 | < 0.001 |
| Exposure level → Perceived threat | 0.24 | 12.40 | < 0.001 |
| Indirect effects              |     |      |      |
| Exposure level → Coping efficacy → Stimulating risk-taking | -0.03 | 5.89  | < 0.001 |
| Exposure level → Perceived threat → Stimulating risk-taking | 0.08 | 11.27 | < 0.001 |

*p < 0.05, **p < 0.01, ***p < 0.001.

**Table 6**
Indirect and direct effects in the structural model of instrumental risk-taking.

| Relationships among variables | β   | t    | p    |
|-------------------------------|-----|------|------|
| Direct effects                |     |      |      |
| Coping efficacy → Instrumental risk-taking | 0.12 | 5.84  | < 0.001 |
| Perceived threat → Instrumental risk-taking | 0.33 | 18.94 | < 0.001 |
| Exposure level → Instrumental risk-taking | -0.05 | 2.47 | 0.014 |
| Exposure level → Coping efficacy | 0.11 | 6.38 | < 0.001 |
| Exposure level → perceived threat | 0.20 | 9.83 | < 0.001 |
| Indirect effects              |     |      |      |
| Exposure level → Coping efficacy → Instrumental risk-taking | 0.01 | 4.25 | < 0.001 |
| Exposure level → Perceived threat → Instrumental risk-taking | 0.07 | 8.96 | < 0.001 |

*p < 0.05, **p < 0.01, ***p < 0.001.

![Fig. 4. Structural model among exposure level perceived threat, coping efficacy, and stimulating risk-taking behaviors.](image1)

![Fig. 5. Structural model among exposure level perceived threat, coping efficacy, and instrumental risk-taking behaviors.](image2)
risk aversion in natural/physical, gambling, safety, moral, and reproductive domains (SRT), but not in financial and corporation/competition domains (IRT). Moreover, the present study discovered two routes between COVID-19 exposure levels and domain-specificity in risk-taking behaviors through perceived threat and coping efficacy. To be specific, perceived threat played an intermediary role between exposure level to coronavirus disease and risk-taking behaviors, and its role is consistent in different domains. Coping efficiency played a mediating role in the negative relationship between the two, and its role is domain-specific. Compared with a perceived threat, coping efficacy is the factor that really explained people’s domain-specific risk-taking behaviors in the context of an epidemic.

As expected, people have domain-specific risk-taking behaviors in the wake of the COVID-19 pandemic. Especially, people showed increased risk aversion in natural/physical, gambling, safety, moral, and reproductive domains, but not in financial and corporation/competition domains. The negative association between exposure to COVID-19 and risk-taking behaviors is consistent with the previous studies, focusing on natural disasters [39,40], man-made, disasters [41,42], and economic recession [43,44]. Furthermore, Abatayo and Lynham [45] conducted a review and found that approximately 60% of extant papers support the view that extreme events induce risk aversion among individuals. This phenomenon is also in line with risk vulnerability theory [46], and it proposes that large-scale disasters can be viewed as “background risk” and make risk-vulnerable people more risk-averse in terms of further choices.

A large sample and cluster analysis methods were conducted to find whether some of the domains in DOSPERT-7 have similarities, and further provide some theoretical basis for domain selection in the DOSPERT-7. Interestingly, we found these seven domains could be clustered into two categories, one includes natural/physical, gambling, safety, moral, and reproduction domains, and another includes financial and corporation/competition domains, which is just the same as the categories of risk-taking behaviors by Zaleskiewicz [16]. On the one hand, SRT refers to the tendency to take risks to experience strong emotional excitement and is correlated with the health, gambling, ethical, and recreational risk domains. On the other hand, IRT is the tendency to take risks to achieve certain goals and is connected to investment and social domains [16]. This cluster analysis result in the present study provides some theoretical basis of domain selection in the DOSPERT and makes us can integrate our former findings on domain-specific risk-taking behaviors in the wake of the COVID-19 pandemic. Namely, people showed increased aversion to risk-taking behaviors in the SRT domain, but not in IRT the domain.

Meanwhile, SRT was more likely to be influenced by exposure to the COVID-19 pandemic when compared with IRT in a short period. Schonberg et al. [47] proposed that clinicians identify risky actions (i.e., drug use, sky diving) as naturalistic risk-taking, which may harm oneself or others [48]. Such behaviors are typically more instinctive and impulsive (short-term perspective), which is in line with the definition of SRT [16]. In contrast, the finance literature defined risk-seeking as preferences for high-variance payoffs. Such behaviors typically involve cognitive processes and are more reflective (long-term perspective), which is similar to the definition of IRT [16]. When one’s life is threatened, one may tend to focus on the current possible gains and make impulsive decisions in the search for pleasure or excitement despite the negative to the self or others. Therefore, the fact that the COVID-19 pandemic, which poses a great extent of health risk [49], could easily and instantly influence individual decision-making in the natural domain (similar to SRT) but could have a relatively small and delayed impact on decision-making in the economic domain (similar to IRT) within a short period time.

This study is the first to reveal the association between exposure to COVID-19 and domain-specific risk-taking behaviors based on PMT. Consistent with our hypothesis, perceived threat positively mediated the relationship between exposure level to COVID-19 and individual risk-taking behaviors. Moreover, the effect was domain-consistent. From the perspective of terror management theory [25], the ever-increasing COVID-19 statistics make the possibility of dying from the deadly COVID-19 highly salient. In addition, social isolation, general economic chaos, and media coverage together may pose as ubiquitous reminders that individuals are vulnerable to the terror of death [50]. Terror management theory postulates that when thoughts about death become the current focus, people will attempt to remove such thoughts from their consciousness [51]. This process may involve engaging in widespread risky actions despite the risk domains, such as excessive eating [52], alcohol use [53], binge-watching behaviors [54], and increased online gambling [55].

Importantly, a primary contribution of the current study is that it addressed the mediating role of coping efficacy on the impact of exposure level and the differences in the effect according to SRT and IRTs. First, the positive relationship between exposure level and coping efficacy is not surprising. Psychological immunization theory poses those individuals naturally gain resistance from repeated exposures to a stressful event and better cope with similar events in the future [56]. Especially in collectivist cultures such as China, individuals can obtain sufficient support at the national level and thus gain the efficacy of the community as psychological protection against the threat of disease [34,57]. Second, coping efficacy exerted distinct effects on SRT and IRT: coping efficacy can negatively predict SRT, but positively predict IRT. On the one hand, efficacy belief is regarded as a protective factor in terms of health behaviors [58]. Recent research highlighted the significant role of coping efficacy during the current outbreak in terms of dealing with stressful situations such as COVID-19 [32,59]. In this manner, individuals will not engage in subsequent SRT for pleasure and excitement as a means of escaping overwhelming stress and fear of death. On the other hand, self-efficacy is directly linked to expectations and goals [60]. According to Zaleskiewicz [16]; the driving force behind IRT is goal achievement. In other words, people take risks as an instrument for achieving long-term goals. Therefore, individuals with high levels of self-efficacy may set higher goals and are more willing to take risks to achieve them. One study used the scale of SRT-IRT by Zaleskiewicz [16] and found that the sense of self-efficacy was the most significant determinant of IRT [61]. These findings are also in line with the previous studies, in the domain with high potential gain (perceived gain is greater than perceived loss), perceived gain mediates the relationship between promotion motivation and risk propensity [62]. However, when a clear perception of risk is acquired, risk aversion tends to occur [63]. Research results confirm this by finding that prevention motivation is negatively correlated with risk-taking in the areas of health/safety, ethics, entertain-
ment, gambling, investment, and social, and facilitation motivation is positively correlated with risk-taking in the areas of social and investment [62].

In addition, the “suppression effect” existed between exposure level and SRT as well as between exposure level and IRT in various forms. Although exposure levels to COVID-19 and IRT appeared to be uncorrelated, exposure levels to COVID-19 negatively predicted SRT and IRT in the structural model. To be specific, in the SRT model, the total effect of exposure level was significant. Conversely, exposure level exerted a negative and direct effect on SRT. At the same time, exposure level had an indirect and significant positive prediction on SRT by increasing perceived threat. At this point, the perceived threat as a suppressor could increase the probability of SRT. However, exposure level could also relieve the tendency of SRT indirectly through coping efficacy. Therefore, the total effect remains negative despite the suppression effect of perceived threat, which means people may take more risks in the absence of coping efficacy. In the IRT model, the total effect of exposure level was non-significant. Previous studies pointed out that even if the total effect is non-significant, indirect effects may still exist in the case of the suppression effect [37]. In the current IRT model, although exposure levels exerted a negative direct effect on IRT, high exposure levels to COVID-19 may heighten both the levels of the perceived threat and coping efficacy. Therefore, the strong suppressing effects of the two mediators naturally offset the direct effect of exposure level. In this manner, the total effect of exposure level on IRT was deemed non-significant.

Conclusion. This study explored whether there is domain-specificity in risk-taking behaviors after the COVID-19 pandemic and the possible explanation of this phenomenon from the perspective of PMT. The findings suggest that people’s risk-taking behaviors do have domain-specificity in the context of the COVID-19 pandemic in China. People showed less risk-taking behaviors in SRT, but not in IRT. Moreover, this study identified two routes between the level of COVID-19 exposure and domain specificity of risk-taking behaviors. The first route is that perceived threat mediates between levels of exposure to coronavirus disease and risk-taking behavior, and its effects are consistent across domains. Another route, coping efficiency, plays a mediating role in the negative correlation between the two, and its role is domain-specific. Compared with the perceived threat, coping efficacy is a key factor to explain the domain-specificity in risk-taking behaviors in the wake of the COVID-19 pandemic.

Limitations of the study. There are three main limitations in the current study. Firstly, we collected cross-sectional data rather than longitudinal data during the whole survey, so it is difficult to see the changes in risk-taking behaviors in the time dimension and the causal relationship between COVID-19 exposure level and risk-taking behaviors across domains could not be inferred. Secondly, the data collected in this study are mainly from the early stage of the outbreak, but the epidemic has entered the normal stage at present. Third, our data has been collected in China, which is a typical collectivist country, conducting a very tight epidemic prevention policy. It remains unclear whether our findings are applicable in other countries or after COVID-19.

Further research on risk-taking behaviors in the COVID-19 pandemic should address these limitations to the extent possible, and three future research are valuable to investigate:

- More longitudinal-design studies should be conducted in the future, which can reveal the changes in risk-taking behaviors with a time dimension and the causal relationships between COVID-19 exposure level and risk-taking behaviors across domains. Moreover, individuals’ characteristics of risk-taking behaviors across domains, especially the economic domain, in the post-pandemic era should be addressed, which may help us know how to achieve economic recovery after the pandemic.
- People often have different risk perceptions and risk-taking behaviors when faced with collective or individual cultures and loose or tight epidemic prevention policies. Is there any difference in the domain specificity of global risk behavior? Is the relationship between subjective risk perception (e.g., individuals’ perceived threat) and risk-taking behaviors consistent with one between objective risk perception (e.g., exposure level to the epidemic) and risk-taking behaviors?
- Given the long duration of the pandemic, public policy on improving coping efficacy is critical to survival and recovery. This study revealed coping efficacy can negatively predict stimulating risk-taking behaviors but positively predict instrumental risk-taking behaviors. How do improve the coping efficiency of the public in different domains of risk behaviors? Is there the same way to improve response efficacy and self-efficacy?

The present study also has practical implications. Specifically, improving coping efficacy is an important means of preventing unnecessary SRT, which may avoid problematic behaviors. Meanwhile, increasing coping efficacy could pay dividends for economic recoveries. As individuals may be less willing to open businesses or invest in the market, it may lead to obvious ramifications for economic growth in the period immediately after a major natural disaster [39]. Therefore, such findings may shed light on how to aid effective intervention and policy-making in the aftermath of future similar epidemic disease disasters.

Compliance with ethical standards

All procedures performed in studies involving human participants were by the Committee of Psychological Research in the Central University of Finance and Economics and with the 1964 Helsinki Declaration and its later amendments.

Informed consent

Informed consent was obtained from all individual adult participants included in the study.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.
Data availability
Data will be made available on request.

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References
[1] K. Xie, B. Liang, M.A. Dulebenets, Y. Mei, The impact of risk perception on social distancing during the COVID-19 pandemic in China, Int. J. Environ. Res. Publ. Health 17 (17) (2020) 6256.
[2] T. Leung, A. Chan, E.W. Chan, V. Chan, T. Wong, Short- and potential long-term adverse health outcomes of covid-19: a rapid review, Emerg. Microb. Infect. 9 (1) (2020) 219–2199.
[3] V.F. Reyna, Decision-making about risk in the era of the novel coronavirus disease, Chest 158 (4) (2020) 1310–1311.
[4] C. Romero-Rivas, S. Rodriguez-Cuadrado, The psychological impact of the covid-19 pandemic affected decision-making processes, Spanish J. Psychol. 24 (2021) e16.
[5] J.R. Freedy, H.S. Resnick, D.G. Kilpatrick, Conceptual framework for evaluating disaster impact: implications for clinical intervention, in: L.S. Austin (Ed.), Responding to Disaster: A Guide for Mental Health Professionals, American Psychiatric Press, Washington, 1992, pp. 6–14 DC.
[6] K. Sacco, V. Galletto, E. Blanzieri, How has the 9/11 terrorist attack influenced decision making? Appl. Cognit. Psychol. 17 (9) (2003) 1113–1127.
[7] M.A. Chiasson, S. Hirshfield, M. Humberstone, J. DiFilipp, B.A. Koblin, R.H. Remien, Increased high-risk sexual behavior after September 11 in men who have sex with men: an Internet survey, Arch. Sex. Behav. 34 (5) (2005) 527–535.
[8] F.H.C. Chou, H.C. Wu, P. Chou, C.Y. Su, K.Y. Tsai, S.S. Chao, M.C. Chen, T.T.P. Su, W.J. Sun, Yang W.C. Ou, Epidemiologic psychiatric studies on post-disaster impact among Chi-Chi earthquake survivors in Yu-Chi, Taiwan, Psychiatr.Clin. Neurosci. 61 (4) (2007) 370–378.
[9] G. Galandra, C. Cerami, G.C. Santi, A. Dodich, S.F. Cappa, T. Vecchi, C. Crespi, Job loss and health threatening events modulate risk-taking behaviours in the Covid-19 emergency, Sci. Rep. 10 (1) (2020) 22236.
[10] E. Soane, N. Chimiel, Are risk preferences consistent? The influence of decision domain and personality, Pers. Indiv. Differ. 38 (8) (2005) 1781–1791.
[11] A. Schwartz, K. Yamagishi, N. Hirahara, H. Onishi, J. Barnes, A. Rosman, M. Garcia, S. Lee, S. Butler, Risk perception and risk attitudes in Tokyo: a report of the first administration of DOSPRT plus M in Japan, Judgement Decis. Making 8 (6) (2013) 691–699.
[12] X.X. Hu, F.P. Xie, Validation of the domain-specific risk-taking scale in Chinese college students, Judgment Decis. Making 7 (2) (2012) 181–188.
[13] J. Wu, H.Y. Cheung, Confirmatory factor analysis of DOSPRT scale with Chinese university students, Psychol. Rep.: Mental Phys. Health 114 (1) (2014) 185–187.
[14] X.T. Wang, R. Zheng, Y.H. Xuan, J. Chen, S. Li, Not all risks are created equal: a twin study and meta-analyses of risk taking across seven domains, J. Exp. Psychol. Gen. 145 (11) (2016) 1548–1560.
[15] A. Wilke, A. Sherman, B. Curdi, S. Mondal, C. Fitzgerald, D.J. Kruger, An evolutionary domain-specific risk scale, Evol. Behav. Sci. 8 (3) (2014) 123–141.
[16] T. Zaleskiewicz, Beyond risk seeking and risk aversion: personality and the dual nature of economic risk taking, Eur. J. Pers. 15 (2001) S105–S122.
[17] M.R. Levenson, Risk taking and personality, J. Pers. Soc. Psychol. 58 (6) (1990) 1073–1080.
[18] B. G. Rogers, Cognitive and psychological processes in fear appeals and attitude change: a revised theory of protection motivation, Soc. Psychophysiol.: A Sourcebook (1983) 153–176.
[19] S. He, S. Chen, L. Kong, W. Liu, Analysis of risk perception factors concerning covid-19 epidemic in Chongqing, China, J. Community Health 46 (2) (2021) 278–285.
[20] D. Tsou, T. Tirasaowadhichai, K.I. Kupryanidi, Role of social media in shaping public risk perception during covid-19 pandemic: a theoretical review, Int. J. Hum. Sci. 7 (2) (2021) 35–41.
[21] J. Hart, J.A. Schwabach, S. Solomon, Going for broke: mortality salience increases risky decision making on the Iowa gambling task, Br. J. Soc. Psychol. 49 (2) (2010) 425–432.
[22] M. Caserotti, P. Girardi, E. Rubalbetti, A. Tasso, L. Lotto, T. Gavaruuzzi, Associations of covid-19 risk perception with vaccine hesitancy over time for Italian residents, Soc. Sci. Med. 273 (2021) 113688.
[23] M. Siegrist, L. Luchinger, A. Bearth, The impact of trust and risk perception on the acceptance of measures to reduce covid-19 cases, Risk Anal. 41 (5) (2021) 787–800.
[24] J. Yuan, H. Zou, K. Xie, M.A. Dulebenets, An assessment of environmental uncertainty: a new approach to risk aversion during the covid-19 epideremic period in China: a cross-sectional survey, Sustainability 13 (14) (2021) 8991.
[25] J. Greenberg, S. Solomon, T. Fysczynski, Terror management theory of self-esteem and cultural worldviews: empirical assessments and conceptual refinements, Adv. Exp. Soc. Psychol. 29 (8) (1997) 61–139.
[26] C.N. DeWall, R.F. Baumeister, From terror to joy: automatic tuning to positive affective information following mortality salience, Psychol. Sci. 18 (11) (2007) 984–990.
[27] K.S. Van Campen, A.J. Romero, How are self-efficacy and family involvement associated with less sexual risk taking among ethnic minority adolescents? Fam. Relat. 61 (4) (2012) 548–558.
[28] L. MacNeil, C. Espósito-Smythers, R. Mehenbeck, J. Weissmoore, The effects of avoidance coping and coping self-efficacy on eating disorder attitudes and behaviors: a stress-diathesis model, Eat. Behav. 13 (4) (2012) 293–296.
[29] R. Wood, A. Bandura, T. Bailey, Mechanisms governing organizational performance in complex decision-making environments, Organ. Behav. Hum. Decis. Process. 46 (2) (1990) 181–201.
[30] G. Cassar, H. Friedman, Does self-efficacy affect entrepreneurial investment? Strateg. Entrep. J. 3 (3) (2009) 241–260.
[31] L. Kang, S. Ma, M. Chen, J. Yang, Y. Wang, R. Li, L. Yao, H. Bai, Z. Gai, B. Xiang Yang, S. Hu, K. Zhang, G. Wang, C. Ma, Z. Liu, Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: a cross-sectional study, Brain Behav. Immun. 87 (2020) 11–17.
[32] M. Xu, R. Zhang, L. Yao, K. Yang, S. Ding, J. Li, S. Li, Proposals for coping with “psychological typhoon eye” effect detected in COVID-19, Bull. Chin. Acad. Sci. 35 (3) (2020) 273–282.
[33] P. Slavic, Perception of risk, Science 236 (4799) (1987) 280–285.
[34] H.S. Kim, D.K. Sherman, J.A. Updegraff, Fear of Ebola: the influence of collectivism on xenophobic threat responses, Psychol. Sci. 27 (7) (2016) 935–944.
[35] J.F. Hair Jr, G.T.M. Hult, C. Ringle, M. Sarstedt, A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), Sage publications, 2016.
[36] O. Yin, K.T. Ramdeen, Hierarchical cluster analysis: comparison of three linkage measures and application to psychological data, Quant. Methods Psychol. 11 (1) (2015) 8–21.
[37] D. MacKinnon, J. Krull, C. Lockwood, Equivalence of the mediation, confounding and suppression effect, Prev. Sci. 1 (2000) 173–181.
[38] K. Preacher, A. Hayes, Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models, Behav. Res. Methods 40 (3) (2008) 397–819.
[39] L. Cameron, M. Shah, Risk-taking behavior in the wake of natural disasters, Soc. Sci. Electr. Publ. 50 (2) (2015) 484–515.
[40] R. Shupp, S. Loveridge, M. Skidmore, J. Lim, C. Rogers, Risk, loss, and ambiguity aversion after a natural disaster, Econom. Disasters Clim. Change 1 (2) (2017) 121–142.
[41] M. Calien, M. Isaqzadeh, J.D. Long, C. Sprenger, Violence and risk preference: experimental evidence from Afghanistan, Am. Econ. Rev. 104 (1) (2014) 123–148.
[42] A. Moya, Violence, psychological trauma, and risk attitudes: evidence from victims of violence in Colombia, J. Dev. Econ. 131 (2018) 15–27.
[43] A. Cohn, J. Engelmann, E. Fehr, M. Maréchal, Evidence for countercyclical risk aversion: an experiment with financial professionals, Am. Econ. Rev. 105 (2) (2015) 860–885.
[44] L. Guiso, P. Sapienza, L. Zingales, Time varying risk aversion, J. Financ. Econ. 128 (3) (2018) 403–421.
[45] A.L. Abatayo, J. Lynham, Risk preferences after a typhoon: an artefactual field experiment with Fishers in the Philippines, J. Econ. Psychol. 79 (2020) 102195.
[46] C. Gollier, J.W. Pratt, Risk vulnerability and the tempering effect of background risk, Econometrica, J. Econom. Soc. (1996) 1109–1123.
[47] T. Schonberg, C.R. Fox, R.A. Poldrack, Mind the gap: bridging economic and naturalistic risk-taking with cognitive neuroscience, Trends Cognit. Sci. 15 (1) (2011) 11–19.
[48] L. Steinberg, A social neuroscience perspective on adolescent risk-taking, Dev. Rev. 28 (1) (2008) 78–106.
[49] A. Egel, S. Adiguzel, Y. Kape, B. Giç, A. Tekin, Risk-taking behavior in recovered covid-19 patients, Psychiatr. Danub. 33 (1) (2021) 107–113.
[50] T. Pyszczynski, M. Lockett, J. Greenberg, S. Solomon, Terror management theory and the COVID-19 pandemic, J. Humanist. Psychol. 61 (2) (2020) 173–189.
[51] J. Greenberg, T. Pyszczynski, S. Solomon, The causes and consequences of a need for self-esteem: a terror management theory, in: Public Self and Private Self, Springer, New York, NY, 1986, pp. 189–212.
[52] A. Ammar, M. Brach, K. Trafelisi, H. Chiourou, O. Boukhris, L. Maxmoudi, A. Hoekelmann, Effects of covid-19 home confinement on eating behaviour and physical activity: results of the eglb-covid19 international online-survey, Nutrients 12 (6) (2020) 1583.
[53] M.S. Pollard, J.S. Tucker, H.D. Green, Changes in adult alcohol use and consequences during the COVID-19 pandemic in the US, JAMA Netw. Open 3 (9) (2020) e2022942.
[54] A. Dixit, M. Marthoenis, S.Y. Arafat, P. Sharma, S.K. Kar, Binge watching behavior during COVID 19 pandemic: a cross-sectional, cross-national online survey, Psychiatr. Res. 289 (2020) 113089.
[55] W. Blasi, Online Poker Betting Hits a Record High during the Pandemic, 2020 Retrieved January 11, 2021, from https://www.marketwatch.com/story/online-poker-betting-hits-a-record-high-during-the-pandemic-2020-05-29.
[56] A.S. Henderson, I.M. Montgomery, C.L. Williams, Psychology immunisation, Lancet 299 (7760) (1972) 1111–1113.
[57] L. Zhang, M. Ma, D. Li, Z. Xin, The psychological typhoon eye effect during the covid-19 outbreak in China: the role of coping efficacy and perceived threat, Glob. Health 16 (1) (2020) 105.
[58] M. Smorti, Sensation seeking and self-efficacy effect on adolescents risky driving and substance abuse, Procedia Soc. Behav. Sci. 140 (2014) 638–642.
[59] H. Xiao, Y. Zhang, D. Kong, S. Li, N. Yang, The effects of social support on sleep quality of medical staff treating patients with coronavirus disease 2019 (COVID-19) in January and February 2020 in China, Med. Sci. Mon. 26 (2020) e923549.
[60] A. Bandura, W.H. Freeman, R. Lightsey, Self-efficacy: the Exercise of Control, Freeman, New York, 1997.
[61] A. Lipińska-Grobelny, I. Malinowska, Personal correlates of risk perception and risk taking by managers, Czasopismo Psychologiczne 14 (2008) 79–87.
[62] X. Zou, A.A. Scholer, Motivational affordance and risk-taking across decision domains, Pers. Soc. Psychol. Bull. 42 (3) (2016) 275–289.
[63] X. Zou, A.A. Scholer, E.T. Higgins, In pursuit of progress: promotion motivation and risk preference in the domain of gains, J. Pers. Soc. Psychol. 106 (2) (2014) 183–201.