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Zhonghui Ding
University of Ljubljana, School of Economics and Business, Ljubljana, Slovenia, ding.zhonghui@ef.uni-lj.si

Matevž Rašković
Auckland University of Technology, Faculty of Business, Economics and Law, Auckland, New Zealand

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ORIGINAL ARTICLE

Change Is in the Minds of the Beholders: A Sociocognitive Comparison of Crisis Perceptions and Change Predictions: Insights From China, New Zealand, and Slovenia

Zhonghui Ding [a,*], Matevž Rašković [b]

[a] University of Ljubljana, School of Economics and Business, Ljubljana, Slovenia
[b] Auckland University of Technology, Faculty of Business, Economics and Law, Auckland, New Zealand

Abstract

Inspired by research on the "geography of thought" within social psychology, we present a cross-cultural comparative study of sociocognitive patterns between China, New Zealand, and Slovenia. We study COVID-19 risk perceptions and also explore predictions of economic trends under four specific economic scenarios. Our results show that the East-versus-West demarcation in terms of cultural boundaries *is* useful but insufficient to understand culturally driven predictions of economic trends. In times of economic downturn, such as the one caused by the recent COVID-19 pandemic, there seem to be universal tendencies towards pessimism. However, significant differences emerge in times of economic growth. Hence, while general human nature comes into play in times of economic adversity, greater differences in terms of "geography of thought" appear in times of economic expansion. For example, while Slovenians and the Chinese are similarly optimistic about economic expansion, New Zealanders seem to be more cautious in assuming the continuation of existing economic expansion. The study also reveals nuances in risk perception, with Slovenians more likely to see the pandemic as an opportunity compared to the Chinese and New Zealanders. Our findings offer valuable insights for policymakers in risk management, particularly in promoting economic resilience.

Keywords: COVID-19 pandemic, Risk perception, Cross-cultural differences in social cognition

JEL classification: O57, Z13, M20

Introduction

Up until recently, the fields of "crisis management" and "resilience" belonged to relatively disconnected literatures with little integration (Williams et al., 2017). In the immediate aftermath of the COVID-19 pandemic, which may well turn out to be a "dress-rehearsal" for future adverse incidents (Hitt et al., 2021, p. 1), the ensuing renaissance of resilience research (Cai, 2020) has stimulated a much-needed theoretical integration between different fields of management and beyond (Hoegl & Hartmann, 2020). However, it has also exposed the need to better understand the cross-cultural aspects of resilience; seeing it anew as not just a process of "bouncing back" but also "bouncing beyond" adversity (Hoegl & Hartmann, 2020). In a world where one cannot always return to a previous state (i.e., a nonergodic environment), resilience can look quite different to what it used to (Rašković, 2022). Studying people's perceptions of COVID-19 can help policymakers better understand the public's sociocognitive processes in response to adverse events more broadly, which can in turn help develop

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* Corresponding author.
E-mail address: ding.zhonghui@ef.uni-lj.si (Z. Ding).

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more effective resilience strategies, as well as improve risk management approaches for similar situations in the future (Dryhurst et al., 2020).

According to categorization theory, people from the same country are often perceived to have more homogeneous social cognitive traits, which in turn helps explain common behaviors in response to specific stimuli/events (Myers et al., 2021; Siegrist & Arvai, 2020), such as a pandemic. The study by Shahin and Hussien (2020) on risk perception of COVID-19 in the Middle East, for example, showed that people from Saudi Arabia display a higher risk perception than people from Egypt and Jordan. The study by Dryhurst et al. (2020) across 10 countries showed country differences in risk perception, with people from the UK having the highest risk perception. Chen et al. (2021) compared the risk perception of people in China and Korea in relation to COVID-19. They found that Chinese respondents focused more on the risk of becoming infected, while Korean respondents focused more on the social risk. Existing research on COVID-19 has mostly focused on the sociodemographic factors (i.e., age, gender, knowledge about the virus) in risk perceptions (Jahangiry et al., 2020; Wise et al., 2020), sociocultural factors, such as personal experiences with the virus (Dryhurst et al., 2020), and measures taken by authorities and organizations (Mansilla Domínguez et al., 2020). However, there seems to be a research gap related to the relationship between cultural categorization and risk perception, particularly in the context of COVID-19. A similar gap also exists when it comes to the relationship between cultural categorization and prediction of future economic performance after COVID-19. Understanding such gaps can thus be beneficial for crisis management in the postpandemic era and for strengthening social resilience more generally (Menzies & Raskovic, 2020).

The sociopsychological and anthropological literature shows that people's cognitive processes and risk perceptions differ across cultures (Gierlach et al., 2010; Kastanakis & Voyer, 2014). The theory of cultural categorization helps explain the impact of social–cultural differences on perception (Myers et al., 2021). Nisbett (2004) and Nisbett and Masuda (2003) have elaborated the fundamental differences between Eastern and Western culture and explained how such differences shape distinct perceptions of the world for people with different cultural backgrounds. According to Nisbett's (2004) concept of the "geography of thought," the collectivist and context-rich Eastern culture perceives crisis and risks differently from the individualistic object- and logic-based Western culture (Nisbett, 2004; Siegrist & Arvai, 2020). To illustrate this, the term "crisis" in Mandarin Chinese consists of two characters: (危 机) (*weiji*). It encompasses two paradoxical concepts: *wei* means danger, and *ji* indicates potential/possible opportunities. *Weiji* means a potential danger or a critical turning point when facing serious difficulties. In the Chinese context, a crisis is viewed from a dynamic and dialectical perspective and signifies a disruption from which new opportunities can arise (Liu et al., 2020; Qi, 2024, p. 120). On the contrary, *crisis* in English denotes a disruptive moment in which a critical judgment and a decisive choice between recovery and death has to be made (Qi, 2024) as a rather linear way of thinking (Nisbett, 2004). However, Nisbett's approach is also not without its criticism of exaggeration and oversimplification of cultures (Chan & Yan, 2013). This is in line with Engel's (2007) opinion that the "geography of thought" is trapped in cultural relativism and neglects cultural universalism.

The abovementioned point of theoretical contention motivated us to replicate Nisbett's (2004) study two decades afterwards in the aftermath of the COVID-19 pandemic as a natural experiment for a global crisis, highlighting the importance of understanding both institutional and cultural factors behind crisis handling (Liu & Froese, 2020; Wang & Laufer, 2020) and social resilience (Menzies & Raskovic, 2020). However, building on the idea of different kinds of cultural clusters (Gupta et al., 2002), we decided to replace Nisbett's original two-country comparison between East (i.e., China) and West (i.e., New Zealand) with a three-country comparative research design which also includes a third country, Slovenia, as a Central and Eastern European cultural yardstick.

Both New Zealand (Robert, 2020) and mainland China (Burki, 2020) have been two often-cited country case studies which juxtapose so-called Western and Eastern cultural archetypes within the Asia–Pacific[1]. Albeit with very different institutional systems, both governments took the zero-COVID elimination approach to handle the pandemic (Patel & Sridhar, 2020). According to the Lowy Institute's COVID-19 performance ranking, New Zealand was consistently ranked among the top two performers worldwide in terms of its effective COVID-19 response, while the Asia–Pacific has outperformed all other regions by a significant margin. Such strong regional performance was also due to China's strong COVID-19

[1] We use the definition of Asia-Pacific from the Cambridge dictionary that it is "a business region that includes Asia and the Pacific Rim (= the countries on the edge of the Pacific Ocean, including Australia and the west coast of the US as well as the small nations of East Asia)" (Cambridge University Press, n.d).

response performance (Lowy Institute, 2021)—at least in the early stages of the pandemic. On the other hand, Slovenia, located in Central and Eastern Europe with a population of only two million people, (mis)handled the COVID-19 pandemic with lower-than-average performance among European Union member states, as evidenced by a much higher number daily confirmed cases per million people, shown in Appendix A.

The aim of our paper is to revisit and reassess the geography-of-thought stream of research by Richard E. Nisbett and his colleagues from more than two decades ago and explore how social cognition influences crisis perceptions and economic change predictions related to the COVID-19 pandemic across three very different countries with three very different sociocultural and institutional profiles.

We provide three contributions of interest to both managers and policymakers dealing with adverse events against a broader backdrop of the emerging literature on cross-cultural and economic geography perspectives on crisis management (Dryhurst et al., 2020; Liu & Froese, 2020; Liu et al., 2020). First, by contrasting mainland China with New Zealand and Slovenia, we are juxtaposing both sociocultural and institutional factors influencing change prediction and risk perceptions of the COVID-19 pandemic, providing implications for culture-specific crisis management strategies (Liu & Froese, 2020). Crisis management starts with categorizing an event and the cognitive schemas invoked around causal attribution to make sense of the event, which then supports prediction (Masuda & Nisbett, 2006; Nisbett & Masuda, 2003). This is particularly relevant for all kinds of adverse events (Williams et al., 2017). Secondly, studying the risk perception surrounding COVID-19 is also beneficial for policymakers to shape and implement various kinds of social and economic resilience strategies by taking into account social cognition. Furthermore, by comparing the cultural influences of risk perceptions across three different culture clusters, we are also contributing to cross-cultural literature on risk perceptions. Third, our research also highlights the importance of understanding cultural universality between East Asian Confucian-influenced cultures and Western cultures (Brewer & Venaik, 2014; Venaik & Brewer, 2019). Such comparative research has important theoretical implications for an emerging body of research on crisis management across cultures (Wang & Laufer, 2020), including the discourse around Chinese management versus an indigenous Chinese theory of management (Barney & Zhang, 2015; Li et al., 2015).

1 Literature review

1.1 Geography of thought and change prediction

Social psychologists such as Nisbett (2004) and de Oliveira and Nisbett (2017) have observed that the cognitive process of thinking is culturally influenced and characterized by distinct cognitive patterns. Accordingly, there seem to be fundamental differences in the thinking patterns between Eastern and Western cultural archetypes (Myers & Twenge, 2019; Unsworth et al., 2016). The authors observed that, for example, people from Eastern Asia tend to take a more holistic approach to processing information, with a context-rich and dialectical way of thinking (de Oliveira & Nisbett, 2017; Spencer-Rodgers et al., 2010). In contrast, the Western way of thinking is more focused on salient objects, using linear logic and an analytical approach to processing information (Nisbett, 2004; Nisbett et al., 2001; Unsworth et al., 2016). Spencer-Rodgers et al. (2010) conducted a cross-cultural study on the perception of change. They found that East Asians are more inclined to predict the pattern of change using dialectical thinking compared to their Western counterparts. On the contrary, Western philosophy follows *the law of noncontradiction* (Spencer-Rodgers et al., 2010) and emphasizes logic and the pursuit of universal truth in line with positivist thinking (Spina et al., 2020). Eastern dialectical thinking could be explained by the Chinese yin–yang philosophy (Fang, 2015), according to which the universe is constantly in a status of change. Such a view seems to be consistent with the idea of dynamic systems and dynamic equilibria, which is one of the fundamental characteristics of nonergodic environment conditions that characterize the postpandemic "new normal" (Hitt et al., 2021) and also have important implications for the understanding of resilience (Rašković, 2022). According to the yin–yang philosophy, the state of "being" perpetually evolves and alternates between two extremes—the yin and the yang. The two elements are interdependent. For example, fortunate events can lead to catastrophic tragedies, and crises can turn into opportunities (Fang, 2006; Ji et al., 2001, 2020). In the Western context, however, people believe that the good/positive situations will continue to get better/more positive, while the bad/negative situations will continue to get worse/more negative. This is more consistent with so-called ergodic environment characteristics, where systems tend to have fairly stable equilibria unless disrupted by freak events (Hitt et al., 2021), which in turn implies resilience as the ability to simply bounce back to an equilibrium state

after a period of disruption (Rašković, 2022). Ji et al. (2020) conducted a study on people's emotions towards the future during the COVID-19 pandemic and found empirical support for the Eastern and Western differences in predicting change. Their findings showed that Canadian participants had more negative emotions towards the unpredictable future, while Chinese participants exhibited both negative and positive emotions when faced with the pandemic. Despite these two oppositive emotions, they remained more positive towards the future.

However, Chan and Yan (2013) used the theory of rationality to criticize Nisbett's (2004) oversimplification, which in their view introduces a false dichotomy between East and West, neglecting the universal rationality of complex thought processes and thinking patterns driven by basic human nature. Instead, they proposed a new framework for the idea behind the geography of thought, which consists of three thinking/reasoning patterns: 1) universal thinking patterns shared by all cultures; 2) common thinking patterns shared by some but not all cultures; and 3) thinking patterns that are unique to a single culture. They further argued that East Asians are not as "irrational" in their thinking approaches as suggested by Nisbett (Chan & Yan, 2013), nor does their dialectical thinking violate the law of noncontradiction as also claimed by Nisbett (2004). According to Chan and Yan (2013), the law of noncontradiction is context-dependent and also highly domain-specific (Chan & Yan, 2013). East Asian dialectical thinking seems to be a functional and sociopractical motive for people seeking to avoid direct confrontation. The avoidance of direct confrontation is shaped by Eastern interdependent and relationship-focused culture (Kastanakis & Voyer, 2014), which is in line with Unsworth et al. (2016)'s findings in categorization differences between the East and West. East Asians tend to categorize objects through relationships, while Westerners do so through similarities in their characteristics (Unsworth et al., 2016). Building on the discussion about the geography of thought within the domain of risk perceptions and change prediction, we propose the following research question 1: What are the common and/or specific thinking patterns between respondents from China, New Zealand, and Slovenia that shape predictions of economic development trends when facing specific economic growth scenarios related to accelerated/decelerated growth/decline?

1.2 Risk perceptions of COVID-19 across cultures

Risk perception is a "subjective judgment about the perceived likelihood of encountering hazards when objective information is minimal" (Gierlach et al., 2010, p. 1539). Gierlach et al. (2010) have outlined three paradigms in risk perception studies. The first is the psychometric paradigm, which focuses on studying individuals' cognitive judgment of dread and unknown risks, such as terrorism. The second paradigm is the social amplification of risk framework, which focuses on encoding the components of the risk, for example, knowledge about a virus (Ning et al., 2020) and institutional trust (Menzies & Raskovic, 2020). After the encoding, what follows is generating interpretations of the risk and then amplifying these interpretations through a variety of communication channels, including individuals, media reports, and/or cultural and political groups, so as to create a consequential societal impact. The third paradigm is the cultural theory paradigm, which focuses on the impact of cultural values and personal experiences of a particular group on individuals' risk perception (Gierlach et al., 2010; Kastanakis & Voyer, 2014). For example, as revealed in the cross-cultural study of risk perceptions by Gierlach et al. (2010), the Japanese display the highest risk perception of natural disasters and terrorist events compared to counterparts from North America and Argentina.

Undoubtedly, COVID-19 was a natural disaster that has caused significant psychological trauma for people around the world (Ji et al., 2020). The consequences of the pandemic, including severe health issues and psychological distress, have been well documented. Studies have focused on how people perceived the risks associated with COVID-19 infection, particularly during the early stages of the pandemic (Mansilla Domínguez et al., 2020). At the very beginning of the pandemic, people perceived the coronavirus as dreadful, disastrous, and uncontrollable. This was because the number of cases was exponentially increasing, but people also had very limited knowledge about the virus and its long-term effects on health, psyche, and social relations in general (Dryhurst et al., 2020; Wise et al., 2020). The feeling of uncertainty and fear was further exacerbated by the constantly unpredictable and ever-changing governmental measures (Huang & Yang, 2020; Wise et al., 2020). Facing such obscure situations, individuals sought information to appraise the risk level and make a prediction/plan for the future (Huang & Yang, 2020), which motivated research on the social amplification of risk. After a while, individuals started to encode the components of the risk through information dissemination/amplification channels such as the media, social media, and informal personal communication with those who had been infected with COVID-19. People then integrated these pieces of information,

Table 1. Hofstede cultural dimensions' scores for China, New Zealand, and Slovenia.

	Power distance	Individualism	Uncertainty avoidance
China	80	43	30
New Zealand	22	69	49
Slovenia	71	81	88

Source: Country comparison tool. Hofstede insights. Retrieved June 7, 2024, from https://www.hofstede-insights.com/

determined the risk levels, and responded in accordance with the determined risk levels. The factors that influenced risk perceptions included mostly citizens' trust in authorities (Ye & Lyu, 2020), knowledge of the virus, and access to information (Huang & Yang, 2020). Those who perceived COVID-19 as high-risk started to actively stockpile goods, such as food and toilet paper (Rune & Keech, 2023; Wang & Gao, 2021). Those who believed the pandemic was a temporary blip and situations would improve perceived COVID-19 as low risk. They did not feel the need to stock up. Both types of behaviors were observed during the early stages of the pandemic.

Compared to the two risk perception paradigms described above, the cultural risk perception paradigm associated with COVID-19 is less researched. Furthermore, the limited existing research on cross-cultural comparison only focuses on the first two paradigms and is regionally based. For instance, Shahin and Hussien's (2020) cross-cultural comparison in the Middle East focused mainly on psychometric factors—that is, perceptions of susceptibility to and seriousness of COVID-19. Chen et al. (2021) explored whether factors such as trust, familiarity with the virus, satisfaction with the government, geographic distance, and other sociodemographic characteristics would influence the risk perception of COVID-19 in China and Korea. Yet, few existing studies have tapped into the link between cultural and institutional factors and the risk perception of COVID-19 across cultures (Siegrist & Arvai, 2020).

In line with the cultural risk perception paradigm, Table 1 displays Hofstede's culture scores for the three countries in our study. China scores the lowest in the dimension of risk avoidance, while Slovenia scores the highest (see Table 1). Siegrist and Arvai (2020) found that the Chinese in general perceive lower risk than American counterparts under the same stimuli.

Culture does not influence just individual and group behavior, but also shapes government performance and trust in government (Porcher, 2019). Trust in government is particularly important during times of crisis, such as the COVID-19 pandemic, influencing how people are willing to follow public health guidelines (Bulut & Samuel, 2023). According to Zhang et al. (2021) and Porcher (2019), the level of trust in government varies across cultures. Individuals from cultures with low power distance and high individualism seek equal rights, self-expression, and focus on self-interests. Therefore, they tend to be more critical of the government and display lower levels of trust (Porcher, 2019). In contrast, people from cultures marked by higher power distance and collectivism accept social hierarchy and unevenly distributed power, as they believe hierarchy brings harmony to the community (Porcher, 2019). Therefore, they are more likely to trust and respect the benevolent autocracy of their government (Zhang et al., 2021). They also display more in-group solidarity than people from individualistic cultures. Empirical studies showed that the collectivistic Chinese tend to trust the central government more than the local government, contrasting with individuals from individualistic cultures (Ma & Christensen, 2018). In general, high trust in the government leads also to more cooperative behavior in following the precautionary measures introduced by the health authorities (Bulut & Samuel, 2023; Ma & Christensen, 2018), resulting in lower risk perceptions (Bulut & Samuel, 2023; Ye & Lyu, 2020). In such a context, it is interesting to compare the risk perceptions of Slovenians with counterparts in China and New Zealand, as Slovenia is a mixture of an institutionally collectivistic culture and individually more individualistic culture.

Further, Eastern dialectical thinking (Boer, 2021) and yin–yang philosophy nurture a positive attitude when facing negative events, as denoted by Mencius, who said "when Heaven is about to confer a great responsibility on any man, it will exercise his mind with suffering" (Ji et al., 2020, p. 1039). Suffering is an unavoidable path towards success, and one could lead to the other. Interestingly, Boer (2021) has also argued that the Marxist nature of China's current political system is well suited to the dialectical nature of Chinese culture. In a study by Ji et al. (2020), they asked the Chinese and Euro-Canadians to associate words with suffering (from COVID-19), and it turned out that Chinese participants associated more positive words to the suffering than their Euro-Canadian counterparts.

From what was discussed above, we came up with the following research question 2: What kind of differences are there in COVID-19 risk perceptions between China, New Zealand, and Slovenia?

2 Data and methodology

2.1 Sample and data collection

The data from China and New Zealand were collected through online survey questionnaires

Table 2. Sample descriptive statistics.

		Gender		Age
	N	M	F	Mean
Slovenia	206	34%	66%	23 (*1.98*)
China	117	34.5%	65.5%	23.69 (*2.13*)
New Zealand	81	40.7%	58%	24.41 (*1.99*)

Note. Standard deviations are shown in parentheses.

anonymously at the early stages of COVID-19. Data from Slovenia was collected through a paper-based questionnaire due to a low response rate to an initial online questionnaire survey. All the data were collected using matched samples involving university students, as is common practice in comparative cross-cultural management studies (Taras et al., 2016). The respondents were business school students, which helped to ensure matching according to age and level of education. We specifically focused on the risk perception of Generation Z, as young generations are in general less susceptible to severe medical consequences than older generations (Bulut & Samuel, 2023). Additionally, existing research indicates that Generation Z shares more homogeneous values and behaviors across cultures than other cohorts.

The survey questionnaire distributed in China and Slovenia was translated into Chinese and Slovenian from the English version for New Zealand. The two questionnaires were then back-translated into English in order to achieve content equivalence (Tyupa, 2011). Table 2 summarizes key descriptive statistics for the three country samples.

2.2 Methodology

In terms of construct operationalization, all the construct measures have been adapted from validated scales. To test the categorization of anticipated economic performance in the next 12 months, we adapted our scale from the cross-cultural research by Nisbett (2004) and Ji et al. (2001). Their research design featured four types of hypothetical graphs depicting different kinds of economic trends over the last five consecutive years: (1) accelerated growth, (2) decelerated growth, (3) accelerated decline, and (4) decelerated decline (see Appendix B). Participants were asked to assign probabilities of the economic acceleration/deceleration/leveling off for the next 12 months based on existing trends for each of the four graphs. The sum of the assigned probabilities had to total 100%, but the respondents could assign 100% probability to either a single scenario (e.g., 100% for the scenario of continued growth) or for multiple scenarios (e.g., 30% for continued growth, 50% for leveling off, and 20% for decreasing).

In terms of the COVID-19 risk perceptions and the overall impact of the pandemic on the economy, which relates to so-called lay theories of change, we followed the work by Dryhurst et al. (2020) on risk perceptions around the world. We used a 7-point semantic differential with specifically designed adjective pairs to test participants' perceptions related to the nature of changes, change rates, and locus of control, as well as knowledge of and perceptions around outcome predictability (see Appendix B).

Given the difference in sample sizes, we also ran a power analysis using G*Power 3.1 to determine the minimum sample size required for mean comparisons using independent samples *t*-tests (Faul et al., 2007). The results shown in Table 3 indicate the required sample size to achieve satisfactory power for detecting a medium effect size ($d = 0.5$) at a significance criterion of $\alpha = 0.05$ (95%). We can see that in all three country sample cases, the actual obtained sample sizes were sufficiently large.

3 Results

3.1 Predictions of economic change across three cultures

Graph 1 depicts accelerated growth (see Appendix B). As can be seen from Fig. 1, most participants believed that the economy would continue to grow in all three countries. In Slovenia, respondents on average believed in a 60% probability of economic growth, and only a 16.58% probability that the economy would decline. The Chinese and New Zealanders displayed a relatively balanced probability of the economic growth trend, with around 45% probability for growth, around 30% probability for decline, and around 25% probability for an economic level off.

In terms of the perception of economy growth in the next 12 months, the independent samples *t*-test (see Table 4) showed that respondents from Slovenia displayed a significantly more positive view than their peers from the other two countries. There were no significant differences in the probabilities of economic outcomes between respondents in China and New Zealand. Further, there was no significant difference across all three countries when it comes to the anticipated leveling off of the economy in the next 12 months for the accelerated growth scenario.

The second scenario corresponded to a decelerated growth scenario shown in Graph 2 in Appendix B. Fig. 2 shows that Slovenian respondents appeared to be on average most positive towards the economy in the next 12 months despite a decelerated growth momentum, while respondents from New Zealand

Table 3. Power analysis of sample size estimation.

	Slovenia (N2) vs. China (N1)	Slovenia (N2) vs. New Zealand (N1)	China (N2) vs. New Zealand (N1)
N1	69	61	**75**
N2	121	**155**	**107**
Allocation ratio (N2/N1)	1.76	2.54	1.44

Independent samples *t*-tests: Difference between two independent means: $\alpha = 0.05$, power = 0.95, medium effect size $d = 0.5$ (Faul et al., 2009). The actual sample size is $n = 206$ for Slovenia, $n = 117$ for China, and $n = 81$ for New Zealand.
Note. The bolded numbers indicate the minimal sample size of each group to achieve statistical power for comparison.

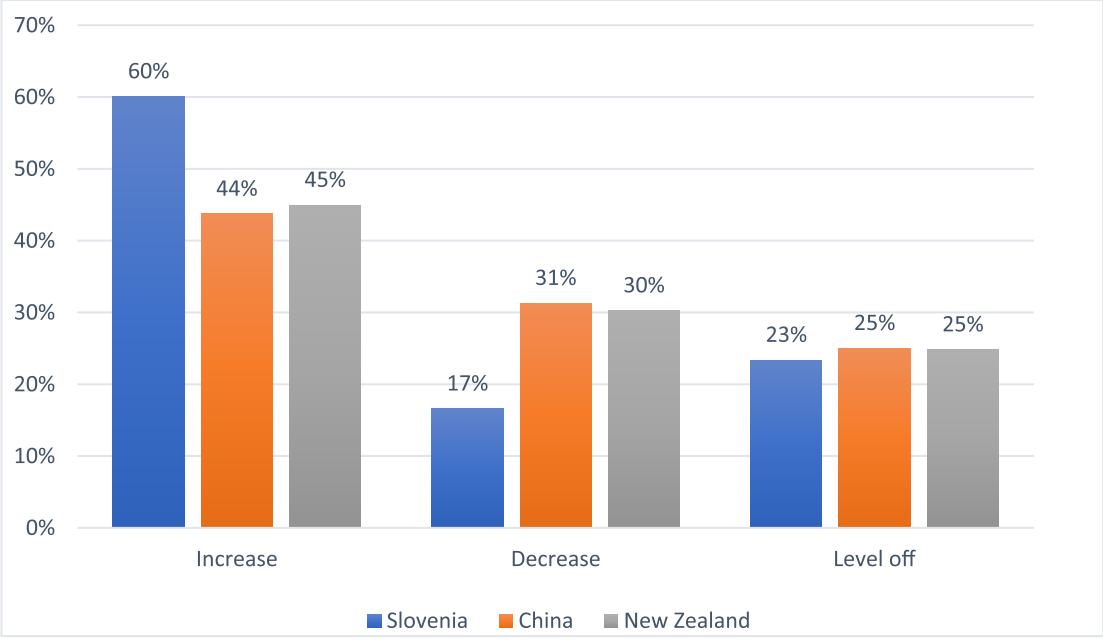

Fig. 1. Probabilities of anticipated economic growth in the next 12 months across the three countries for accelerated growth scenario.

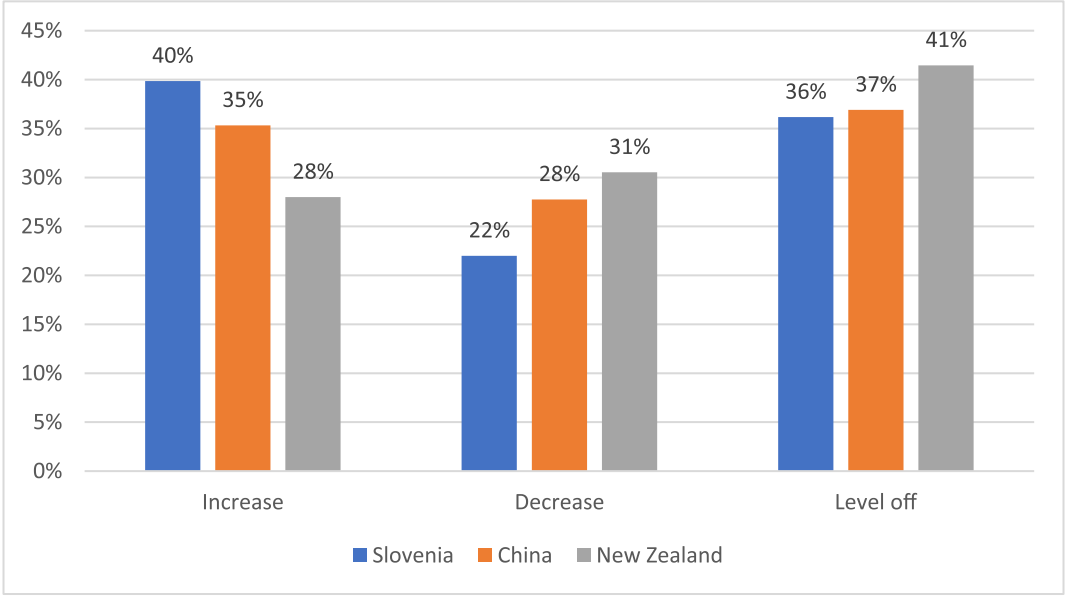

Fig. 2. Probabilities of economic growth in the next 12 months in three countries for decelerated growth scenario.

Table 4. Independent samples t-tests for anticipated economic growth in next 12 months for accelerated growth scenario.

Accelerated growth scenario		Slovenia vs. China					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	Slovenia	60.06 (28.13)	**0.32**	**.85**	**4.94**	**<.001**	**0.58**
	China	43.71 (28.85)			**(*df* = 236)**		
Decrease	Slovenia	16.58 (18.01)	**32.16**	**<.001**	**−5.92**	**<.001**	**−0.69**
	China	31.28 (26.43)			**(*df* = 321)**		
Level off	Slovenia	23.36 (20.94)	3.68	.056	−7.28	.23	−0.08
	China	25.01 (18.84)			(*df* = 263)		
		Slovenia vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	Slovenia	60.06 (28.13)	**10.64**	**.001**	**3.87**	**<.001**	**0.51**
	NZ	44.94 (33.73)			**(*df* = 285)**		
Decrease	Slovenia	16.58 (18.01)	**57.36**	**<.001**	**−4.69**	**<.001**	**−0.62**
	NZ	30.25 (30.43)			**(*df* = 285)**		
Level off	Slovenia	23.36 (20.94)	0.26	.61	−.53	.30	−0.07
	NZ	24.81(20.95)			(*df* = 146)		
		China vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	China	43.71 (28.85)	8.53	.004	−2.77	.39	−0.04
	NZ	44.94 (33.73)			(*df* = 196)		
Decrease	China	31.28 (26.43)	3.94	.48	.26	.40	−0.04
	NZ	30.25 (30.43)			(*df* = 196)		
Level off	China	25.01 (18.84)	1.06	.31	.07	.47	0.01
	NZ	24.81(20.95)			(*df* = 160)		

Note. The bolded numbers indicate there is significant difference between the compared two countries in that economic scenario.

showed the most negative attitude towards economy with the lowest average assigned probability of continued economy growth (28.0%), the highest probability of leveling off (41.46%), and the highest probability in economy deceleration (30.53%). Chinese respondents held a more balanced view in terms of the economic growth prediction for a decelerated growth scenario.

The independent samples *t*-test results in Table 5 show a significant difference in terms of the probability of an economic increase in next 12 months across all three countries for the decelerated growth scenario. Slovenian respondents seemed to be the most positive, with 39.86% predicting economic growth. This was followed by Chinese respondents (35.33%) and New Zealand respondents (28%). In terms of the probability of economic downturn, Slovenian respondents held a significantly different opinion than their peers from the other two countries. They believed there was only a 22% probability of economic decrease in the next 12 months, which is much lower than with peers from the other two countries (China 27.75% and New Zealand 30.53%). There is no difference in terms of the economic decrease between Chinese and New Zealand respondents. In terms of general perceptions of economic leveling off (as captured by the decelerated growth scenario), New Zealanders showed a significantly higher probability (41.46%) than their peers from either of the other two countries. In conclusion, Slovenian respondents displayed a more positive attitude towards the future economy despite the decelerated growth trend while New Zealanders were the least positive. This is interesting, as it is exactly the opposite to how these two countries performed in terms of handling the COVID-19 pandemic.

Graph 3 corresponds to an accelerated decline scenario, the inverse of an accelerated growth scenario in Graph 1. Fig. 3 shows that the anticipation of economic growth in all three countries was expectedly relatively low. The participants assigned the highest probability to economic decline, which was consistent with the accelerated decline scenario. The independent samples *t*-test (see Table 6) shows a slight difference between China and New Zealand when it comes to the probabilities of economic growth. The Chinese

Table 5. Independent samples t-tests for the economic anticipation in the next 12 months for the decelerated growth scenario.

Decelerated growth scenario							
		Slovenia vs. China					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	Slovenia	39.86 (27.50)	**0.34**	**.56**	**1.50**	**.07**	0.17
	China	35.33 (25.22)			**(*df* = 259)**		
Decrease	Slovenia	22.00 (21.52)	**5.41**	**.02**	**−2.23**	**.01**	**−0.26**
	China	27.76 (23.69)			**(*df* = 321)**		
Level off	Slovenia	36.17 (25.65)	0.22	.64	−0.26	.40	−0.03
	China	36.91 (24.48)			(*df* = 251)		
		Slovenia vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	Slovenia	39.86 (27.50)	**0.74**	**.39**	**3.58**	**<.001**	**0.45**
	NZ	28.00 (24.36)			**(*df* = 164)**		
Decrease	Slovenia	22.00 (21.52)	**12.36**	**<.001**	**−2.75**	**.003**	**−0.36**
	NZ	30.53 (28.56)			**(*df* = 285)**		
Level off	Slovenia	36.17 (25.65)	**0.31**	**.58**	**−1.61**	**.06**	**−0.21**
	NZ	41.46 (24.81)			**(*df* = 151)**		
		China vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	China	35.33 (25.22)	**0.13**	**.73**	**2.05**	**.02**	**0.30**
	NZ	28.00 (24.36)			**(*df* = 176)**		
Decrease	China	27.76 (23.69)	2.29	.13	−7.21	.24	−0.11
	NZ	30.53 (28.56)			(*df* = 151)		
Level off	China	36.91 (24.48)	**0.02**	**.89**	**−1.28**	**.10**	**−0.19**
	NZ	41.46 (24.81)			**(*df* = 171)**		

Note. The bolded numbers indicate that there is significant difference between the compared two countries in that economic scenario.

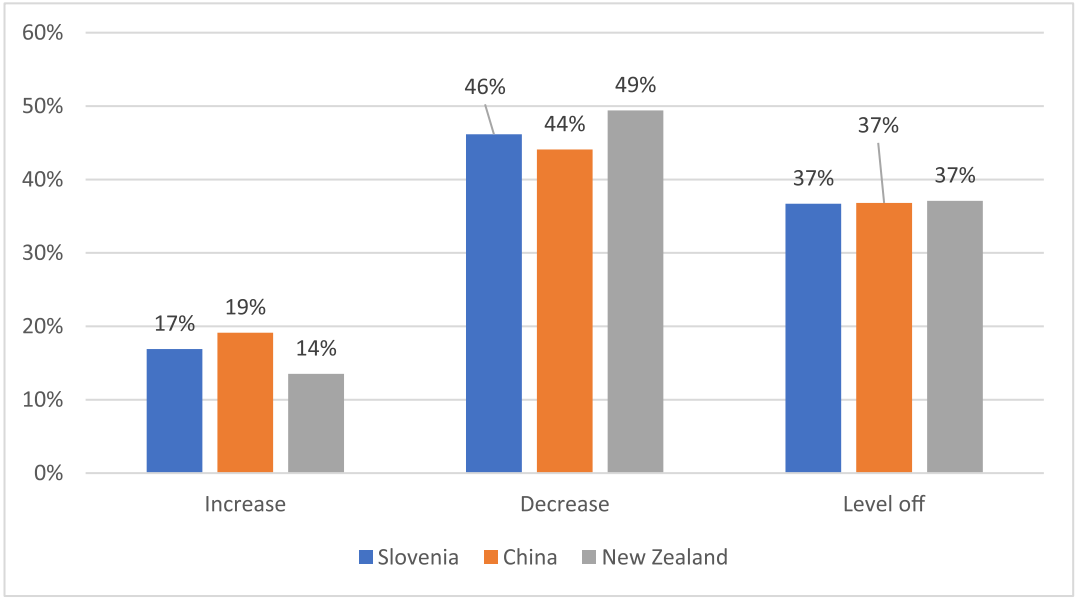

Fig. 3. Probabilities of economic growth in the next 12 months in three countries for the accelerated decline scenario.

Table 6. Independent samples t-tests for the economic anticipation in next 12 months for accelerated decline scenario.

Accelerated decline scenario							
		Slovenia vs. China					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	Slovenia	16.90 (21.05)	0.05	.83	−0.87	.19	−0.10
	China	19.12 (22.78)			(*df* = 226)		
Decrease	Slovenia	46.16 (27.99)	0.27	.61	0.66	.26	0.08
	China	44.08 (27.15)			(*df* = 247)		
Level off	Slovenia	36.69 (25.02)	0.69	.41	−0.04	.49	−0.00
	China	36.80 (24.53)			(*df* = 245)		
		Slovenia vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	Slovenia	16.90 (21.05)	1.59	.21	1.26	.11	0.16
	NZ	13.52 (20.28)			(*df* = 151)		
Decrease	Slovenia	46.16 (27.99)	0.14	.70	−0.89	.19	−0.12
	NZ	49.40 (27.81)			(*df* = 147)		
Level off	Slovenia	36.69 (25.02)	0.29	.59	−0.12	.45	−0.01
	NZ	37.09 (25.01)			(*df* = 147)		
		China vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	China	19.12 (22.78)	**0.71**	**.40**	**1.81**	**.04**	**0.26**
	NZ	13.52 (20.28)			**(*df* = 184)**		
Decrease	China	44.08 (27.15)	0.00	.95	−1.34	.92	−0.19
	NZ	49.40 (27.81)			(*df* = 169)		
Level off	China	36.80 (24.53)	0.03	.87	−0.08	.47	−0.01
	NZ	37.09 (25.01)			(*df* = 170)		

Note. The bolded numbers indicate that there is significant difference between the compared two countries in that economic scenario.

were slightly more positive towards economic growth under the accelerated decline scenario (19.12% probability) in comparison to New Zealanders' views (13.52% probability). There was no difference across the three countries in terms of anticipated economic decline, as well as economic leveling off.

Graph 4, which corresponded to a decelerated decline scenario, reveals that the participants from all three countries in general anticipated an economic decline in the next 12 months. Among them, the anticipated probability of an economic decline was highest for New Zealand (69.33%) and lowest for China (55.97%) (Fig. 4). The independent samples *t*-test (Table 7) shows that Chinese respondents were still slightly more positive towards economic growth in comparison with respondents from Slovenia and New Zealand. However, when it comes to the anticipation of economic leveling off, there is only a significant difference between the Chinese and New Zealand respondents, with Chinese participants assigning significantly higher probabilities of economic leveling off than New Zealanders.

In summary, participants from all three countries share similar thinking patterns for predicting economic growth except when facing a decelerated growth scenario. In general, all participants predict that the economy will continue to grow when facing an accelerated economic growth scenario and that the economy will decrease when facing the scenario of economic decline. The differences in the prediction of economic growth are, however, more nuanced than that. In economic growth scenarios, whether accelerated or decelerated, Slovenian participants have a more positive outlook compared to their counterparts from China and New Zealand. In scenarios of economic decline, Chinese participants tend to have a more positive attitude toward the future compared to participants from the other two countries. This suggests that Chinese individuals tend to exhibit more dialectical thinking patterns when experiencing difficult times, which would align with the findings of Ji et al. (2020) (i.e., that Chinese people display more positive attitudes than Euro-Canadians when dealing with the hardships of the COVID-19 pandemic).

Table 7. Independent samples t-tests for economic anticipation in next 12 months for decelerated decline scenario.

Decelerated decline scenario							
		Slovenia vs. China					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	Slovenia	10.47 (16.48)	**9.55**	**.00**	**−2.95**	**.00**	**−0.34**
	China	16.85 (22.13)			**(*df* = 321)**		
Decrease	Slovenia	64.51 (29.33)	**0.94**	**.33**	**2.55**	**.01**	**0.29**
	China	55.97 (28.78)			**(*df* = 245)**		
Level off	Slovenia	24.68 (22.37)	0.19	.67	−0.94	.17	−0.11
	China	27.17 (23.08)			(*df* = 235)		
		Slovenia vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	Slovenia	10.47 (16.48)	1.03	.31	0.96	.17	0.12
	NZ	8.49 (15.31)			(*df* = 157)		
Decrease	Slovenia	64.51 (29.33)	7.52	.01	−1.30	.10	−0.17
	NZ	69.33 (25.37)			(*df* = 285)		
Level off	Slovenia	24.68 (22.37)	3.84	.05	0.89	.19	0.12
	NZ	22.17 (19.42)			(*df* = 285)		
		China vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
Increase	China	16.85 (22.13)	**9.85**	**.00**	**2.95**	**.00**	**0.43**
	NZ	8.49 (15.31)			**(*df* = 196)**		
Decrease	China	55.97 (28.78)	**2.49**	**.12**	**−3.45**	**<.001**	**−0.49**
	NZ	69.33 (25.37)			**(*df* = 185)**		
Level off	China	27.17 (23.08)	**1.68**	**.20**	**1.65**	**.05**	**0.23**
	NZ	22.17 (19.42)			**(*df* = 189)**		

Note. The bolded numbers indicate that there is significant difference between the compared two countries in that economic scenario.

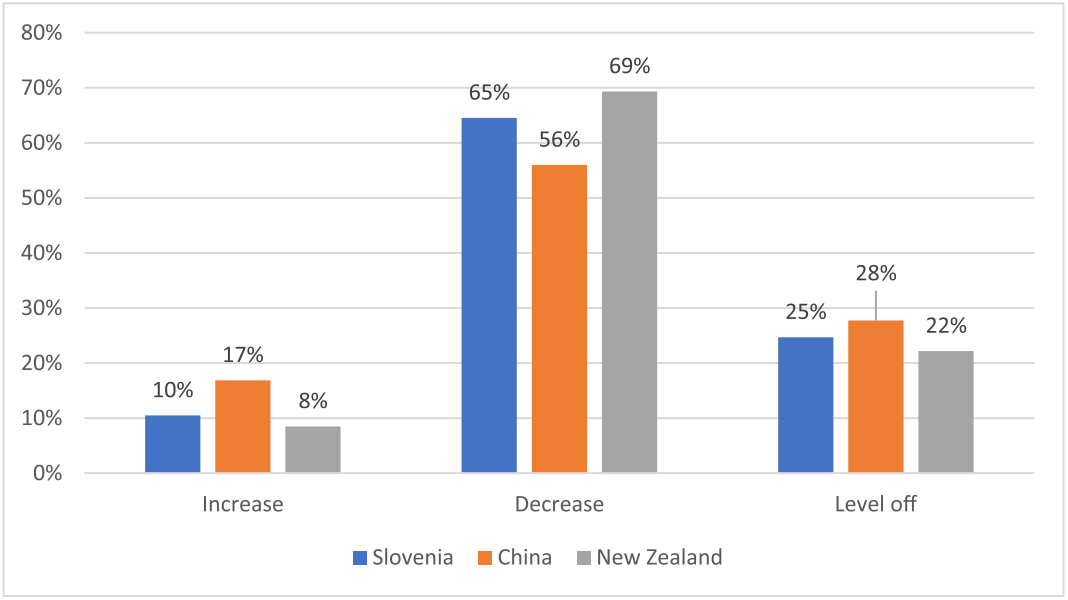

Fig. 4. Probabilities of economic growth in the next 12 months in three countries for the decelerated decline scenario.

Table 8. Summary of predictions of economic change in the next 12 months under different economic scenarios.

Economic growth scenario	Predictions of participants from three countries	Differences in the predictions across three countries
Accelerated growth	The economy will continue to grow	The participants from Slovenia are the most optimistic about economic growth
Decelerated growth	The economy will continue to grow (except for New Zealand)	
Accelerated decline	The economy will continue to decline	The Chinese participants are the least pessimistic about the economic decline
Decelerated decline	The economy will continue to decline	

Table 8 provides a high-level summary of our findings.

3.2 Perceptions of COVID-19

Comparing perceptions of COVID-19 and its consequences for the economy between the three countries, the results in Table 9 show the Chinese respondents believed COVID-19 arose more from the environment (mean score of 4.82 on a 7-point semantic scale) compared to their peers in Slovenia (3.83) or New Zealand (3.90). These differences were statistically significant ($p < .001$) with moderate effect sizes captured by Cohen's d effect size measure. Respondents from all three countries viewed COVID-19 as somewhat dangerous to the economy in the next 12 months with average mean scores in the middle of the danger–opportunity continuum. Participants from New Zealand, for example, held the most negative view of COVID-19, associating it more strongly with danger (2.93) compared to Slovenian participants, who perceived it in a more balanced manner as a mixture of danger and opportunity (3.87 mean score).

With regards to perceptions relating to the speed of change associated with COVID-19 (i.e., slow vs. rapid rate of change), respondents in all three countries perceived the changes induced by COVID-19 as relatively rapid in nature, with average scores above 4.96 on a 7-point slow-to-rapid semantic differential scale. Among the three countries, respondents from New Zealand perceived the rate of change brought on by COVID-19 as fastest (5.59) compared to China (5.15) and Slovenia (4.96). The effect size of the differences was small to moderate. In terms of the nature of change, either "good" or "bad," respondents from all three countries evaluated COVID-19 as a "bad" kind of change. New Zealand respondents on average displayed a much higher tendency to evaluate COVID-19 as a bad kind of change (4.9), compared to Slovenia (4.57) or China (4.42). However, it is important to note that Cohen's d effect size differences were quite small. Unsurprisingly, respondents in all three countries believed they had relatively insufficient knowledge and understanding of COVID-19, which according to their views also brought on rather unpredictable consequences.

Overall, Chinese respondents displayed a more balanced view of COVID-19 and showed relatively more positive attitudes compared to their peers from New Zealand. However, the results also showed that though Slovenia in general belongs to a Western sociocultural archetype, respondents from Slovenia also displayed a rather balanced view of COVID-19 compared to New Zealand respondents. Somewhat surprisingly, they also showed a more positive attitude towards the future; this may link to the high level of collectivism. This would, however, warrant further investigation.

4 Discussion

4.1 Findings and implications

By comparing individual prediction of economic change under different economic scenarios, our research contributes to the literature on the Eastern and Western "geography of thought" (Nisbett, 2004) and adds to the literature on dialectical thinking patterns. Our findings support Chan and Yan's (2013) view that drawing on East-versus-West cultural boundaries might be a useful but insufficient distinction for understanding the sociocultural drivers of economic predictions.

Their proposed framework of thought geography instead allows for a more nuanced analysis of how different cultures influence people's thinking patterns when confronted with different economic scenarios. First, when participants from all three countries are confronted with a declining economic scenario, this seems to invoke a universal thinking pattern leading them to predict the economy will continue to decline (Chan & Yan, 2013). Secondly, Slovenian and Chinese respondents share a common thinking pattern in predicting that the economy will continue to grow when faced with scenarios of economic growth. However, respondents from New Zealand exhibit a unique pattern of thinking when facing decelerated

Table 9. Perception of the nature of COVID-19 (measured on 7-point semantic differentials).

		Slovenia vs. China					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
1—human-induced event vs. 7—event arising from the environment	Slovenia	3.83 (1.75)	**7.83**	**.01**	**−4.60** (***df*** **= 318**)	**<.001**	**−0.53**
	China	4.82 (2.02)					
1—insufficient vs. 7—sufficient knowledge and understanding	Slovenia	3.45 (1.71)	0.05	.82	−0.10 (*df* = 233)	.50	−0.01
	China	3.47 (1.73)					
1—danger vs. 7—opportunity	Slovenia	3.87 (1.63)	**0.70**	**.41**	**1.71** (***df*** **= 216**)	**.05**	**0.20**
	China	3.54 (1.69)					
1—unpredictable vs. 7—predictable consequences	Slovenia	3.56 (1.81)	3.64	.06	0.25 (*df* = 319)	.40	0.03
	China	3.51 (1.66)					
1—slow rate of change vs. 7—rapid rate of change	Slovenia	4.96 (1.72)	2.78	.10	−1.04 (*df* = 320)	.15	−0.12
	China	5.15 (1.50)					
1—good change vs. 7—bad change	Slovenia	4.57 (1.65)	0.26	.61	0.76 (*df* = 236)	.22	0.09
	China	4.42 (1.69)					
		Slovenia vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
1—human-induced event vs. 7—event arising from the environment	Slovenia	3.83 (1.75)	0.06	.81	−0.30 (*df* = 149)	.38	−0.04
	NZ	3.90 (1.72)					
1—insufficient vs. 7—sufficient knowledge and understanding	Slovenia	3.45 (1.71)	3.18	.08	0.25 (*df* = 284)	.40	0.03
	NZ	3.40 (1.51)					
1—danger vs. 7—opportunity	Slovenia	3.87 (1.63)	**0.50**	**.48**	**4.66** (***df*** **= 157**)	**<.001**	**0.59**
	NZ	2.93 (1.52)					
1—unpredictable vs. 7—predictable consequences	Slovenia	3.56 (1.81)	2.02	.16	1.18 (*df* = 156)	.12	0.15
	NZ	3.3 (1.70)					
1—slow rate of change vs. 7—rapid rate of change	Slovenia	4.96 (1.72)	**6.14**	**.01**	**−3.00** (***df*** **= 284**)	**.001**	**−0.39**
	NZ	5.59 (1.32)					
1—good change vs. 7—bad change	Slovenia	4.57 (1.65)	**0.01**	**.91**	**−1.53** (***df*** **= 144**)	**.06**	**−0.20**
	NZ	4.90 (1.68)					
		China vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
1—human-induced event vs. 7—event arising from the environment	China	4.82 (2.02)	**6.12**	**.01**	**3.34** (***df*** **= 196**)	**<.001**	**0.48**
	NZ	3.90 (1.72)					
1—insufficient vs. 7—sufficient knowledge and understanding	China	3.47 (1.73)	1.80	.18	0.31 (*df* = 185)	.38	0.05
	NZ	3.40 (1.51)					
1—danger vs. 7—opportunity	China	3.54 (1.69)	**1.85**	**.18**	**2.62** (***df*** **= 182**)	**.01**	**0.38**
	NZ	2.93 (1.52)					
1—unpredictable vs. 7—predictable consequences	China	5.15 (1.50)	**0.99**	**.32**	**−2.18** (***df*** **= 185**)	**.02**	**−0.31**

(*continued on next page*)

Table 9. (Continued).

		China vs. New Zealand (NZ)					
			Levene's *t*-test		*t*-test of means		Effect size
		Mean (%)	*F*	Sig	*t*	Sig (one-tailed)	Cohen's *d*
	NZ	5.59 (1.32)					
1—slow rate of change vs. 7—rapid rate of change	China	3.51 (1.66)	0.05	.82	0.89 ($df = 170$)	.19	0.13
	NZ	3.3 (1.70)					
1—good change vs. 7—bad change	China	4.42 (1.69)	**0.09**	**.77**	**−1.98** (***df* = 173**)	**.03**	**−0.29**
	NZ	4.90 (1.68)					

Note. The bolded numbers indicate that there is significant difference between the compared two countries in that perception of the nature of COVID-19.

growth. They predict that the economy will be more inclined to decrease. Further, when looking into a more nuanced comparison of predictions across the three countries, the results show that Slovenian respondents are the most positive towards the future economic trends when facing scenarios of economic growth, while Chinese respondents display the least negative attitudes towards the future economy when facing scenarios of an economic decline.

This indicates that Slovenian respondents tend to have a more linear thinking pattern when facing positive situations, while Chinese respondents tend to hold a more dialectical thinking pattern when facing adverse situations, which is in line with the finding by Ji et al. (2020) that the Chinese perceived suffering from COVID-19 in a more tolerable way than Westerners. The findings by Zhang et al. (2018) on people's perception of risk during the outbreak of SARS also indicated similar results. The authors noticed that the Chinese were more optimistic than the Canadians. This could relate to the Chinese dialectical yin–yang philosophy, where people tend to see risk in a more dialectical and paradoxical way (Fang, 2015). We speculate it could also be linked to the Chinese value system, which prioritizes group well-being over individual outcomes (Venaik & Brewer, 2019).

Further, our research also contributes to the limited research using the cultural paradigm of risk perceptions (Chan & Yan, 2013). Our findings show mixed results, and not all of the results can be explained by Hofstede's cultural scores (see Table 1 again). For instance, Slovenian respondents display more dialectical thinking in viewing the pandemic as either an incident of danger or an incident with opportunities, being more inclined to view it as an opportunity than Chinese participants, followed by New Zealand participants. Further, Slovenian participants view the rate of pandemic change as slower than participants from New Zealand. Therefore, dialectical thinking patterns cannot seem to be adequately explained by individualistic–collectivistic culture (alone). Fang (2015) and Pfajfar et al. (2016) noted that Hofstede's culture dimensions view culture as a bipolar static concept; however, culture is ever-changing and should be viewed in a dynamic context. We believe the yin–yang approach can be applied to a broader range of cultures. For example, Pfajfar et al. (2016) observed that Slovenian managers apply both highly collectivistic and individualistic leadership in the workplace, which implies that collectivism and individualism could coexist spontaneously.

Our findings also empirically contribute to cross-culture studies on risk perception in underresearched countries, such as Slovenia or New Zealand. We found that Slovenian respondents had a more positive attitude, perceiving COVID-19 as less dangerous than the Chinese, and much less dangerous than New Zealanders. Further, they also perceive a slower rate of change as well as do not see the change to be as bad as New Zealanders do. This opens a new research question; albeit geographically closer to the origin of Western culture (Greece), Slovenians also seem to carry certain East Asian cultural traits such as showing a tendency to be more positive when facing an adverse situation, which could also be influenced by institutional change and their recent history. On the contrary, New Zealand and China are located in the Asia–Pacific region, and their respective governments both imposed strict zero-tolerance COVID-19 policies. However, the people's perception towards COVID-19 and its impact on economic change are drastically different. To build on the idea of integrating an intersectional perspective into cross-cultural categorization within risk management, we propose that social–historical and social–economic factors need to be taken into consideration. Despite the geographic distance between Slovenia and China, we believe the contemporary communism and socialism paradigms nurtured certain common economic and historical paths between the two countries, which

can be consistent with Bandura's (1986) sociocognitive theory of human behavior being codetermined by the environment, their social cognition, and normative behavior.

Last but not least, our study also raises some policymaking implications in the areas of risk and resilience management. The Chinese term for crisis (危机 wēijī) refers to a critical moment or a turning point of an event, indicating the coexistence of risks and opportunities. Such a more positive Chinese attitude towards adverse situations is reflected, for example, in McKinsey & Company's (2020) survey on consumer sentiment during the pandemic in the Asia–Pacific region. Consumers from China, India, and Indonesia expected a quicker recovery from COVID-19 compared to those from Australia, the UK, and the USA. This indicates that Western policymakers may need to put in more effort to boost market/consumer confidence and economic resilience than their Eastern counterparts. We believe valuable lessons can be learned from Chinese dialectical thinking to manage paradoxes effectively (Faure & Fang, 2008), which should also make its way into policy thinking, especially under the existence of nonergodic environment conditions (Rašković, 2022).

4.2 Limitations and future research

Our study is subject to a few limitations, which need to be kept in mind when making any sort of causal inferences pertaining to any kind of cross-sectional study. While using a matched sampling approach (widely accepted in cross-cultural and social psychology studies), we do acknowledge the need to cross-validate our results across other demographic cohorts beyond Generation Z. First, individuals at different life stages may perceive and interpret risks in significantly different ways (Cohn et al., 1995). Second, as older generations are more vulnerable in terms of their health (Bulut & Samuel, 2023), examining their risk perceptions of COVID-19 requires careful consideration of control variables such as prior infection status, recovery time, and vaccination status. Our study was also conducted at the early stage of the COVID pandemic, so people might have changed their risk perception along the evolution of the pandemic, particularly when the WHO announced the end of the pandemic. It would be useful to have longitudinal data on people's perception of risk in the postpandemic era, so as to get a higher-order perspective and a better understanding of people's cognitive changes through the different stages of the pandemic. Thirdly, our paper explored similarities and differences in the young generation's risk perception across three countries from a cultural perspective. We did not control for trust in government policies or the efficacy of policy responses during the COVID-19 pandemic, which are significant limitations that we acknowledge. For future research, we suggest testing also the impact of socioeconomic and social–historical factors on people's risk perception of the economy when facing public health emergencies, as well as the effectiveness of government policies and general attitudes towards the respective governments.

Although the focus of our paper has not been on the mediating role of official discourses, such as political systems or the media (Tsfati & Ariely, 2013; Ye & Lyu, 2020; Wang & Laufer, 2020), in shaping public risk perceptions towards COVID-19, the three countries we studied have both different political systems and different historical trajectories. Future research should explore these issues to provide a more holistic understanding of triadic codetermination between various environmental, sociocognitive, and normative factors behind people's risk perceptions.

The existing literature provides contradictory results on the relationship between the political system and trust in government. Tsfati and Ariely (2013), for example, argue that the type of political system, whether autocratic or democratic, does not determine the public's trust in government per se. Rather, the performance of the government plays a crucial role in building this trust. Moreover, cross-cultural research shows that social media functions differently in different cultural contexts (Wang & Laufer, 2020). Nevertheless, the relationship between political systems, trust in government, and media is still underresearched. We suggest that future studies pay special attention to all these factors.

5 Conclusion

The purpose behind our study was to revisit and test the applicability of Nisbett's seminal work from two decades ago, at a time when the world was very different from what it is today. Our study showed that Nisbett's static view of the "geography of thought" oversimplifies cultures and is no longer fit for purpose. Instead, a more nuanced understanding is needed of the various factors and sociocognitive process which shape our perceptions of risk and our predictions of economic changes based on current trends. Overall, however, our findings were largely consistent with Chan and Yan's (2013) new "geography of thought" framework, recognizing that there are three dimensions of thinking and reasoning patterns capturing full universality, full cultural contingency, and a degree of bounded universality across some but not all cultures. Applying such a

framework and integrating it with a more analytical and theoretically informed understanding of the role of specific institutional factors, politics, histories, and experiences with past adverse events can in turn help inform the evolution of existing literature on risk perceptions and theories of change, which need to be revisited and updated in a new kind of postpandemic "new normal" (Hitt et al., 2021).

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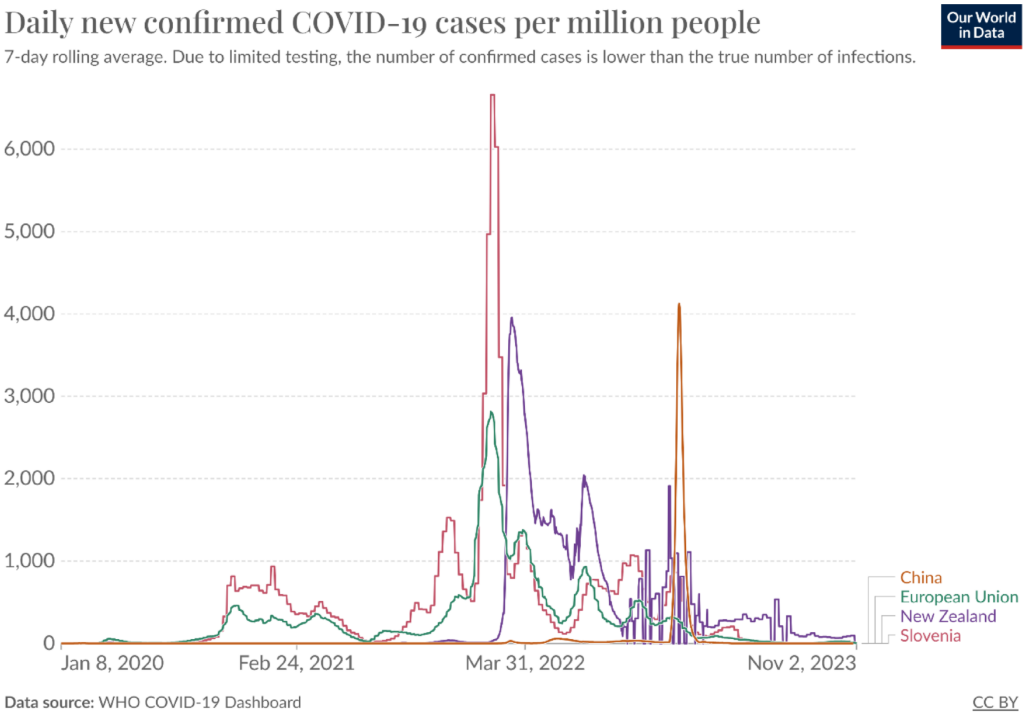
Appendix A: Comparison of daily new confirmed COVID-19 cases per million people between China, Slovenia, New Zealand and European Union



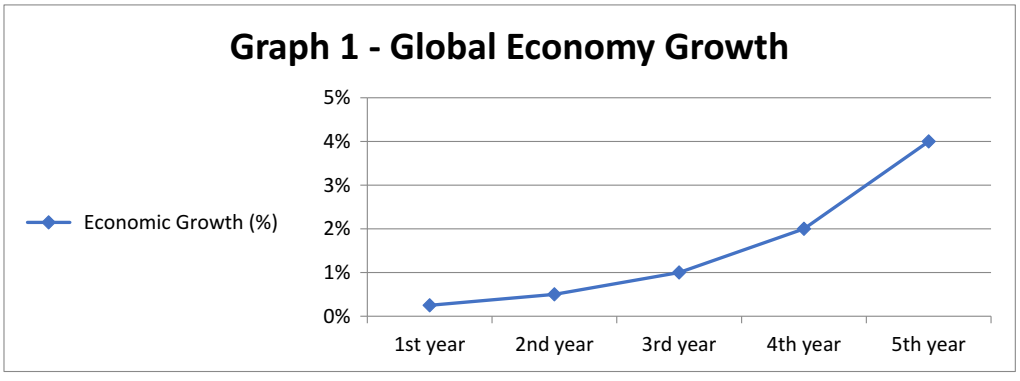
Appendix B: Questionnaire on culture and perception of change

The following section contains **four** illustrative graphs relating to the global economy over a period of five years. Each graph is based on hypothetical data and showcases different economic growth trends.

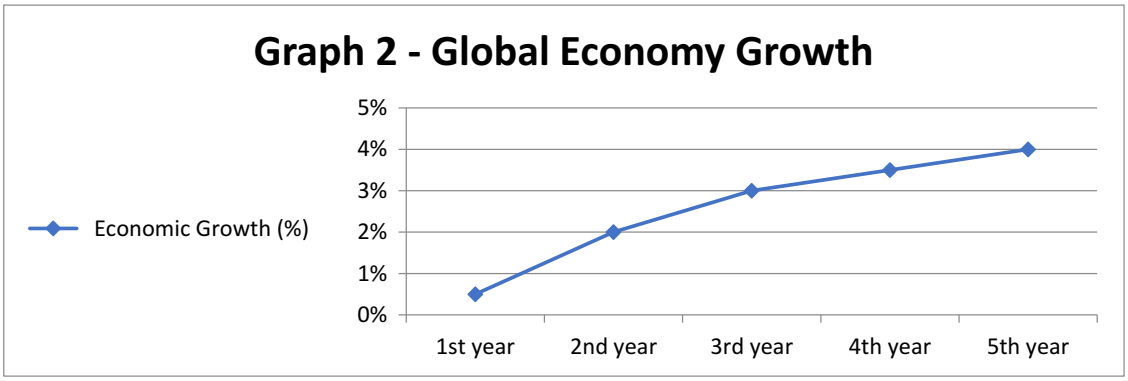
Based on each corresponding graph, what do you think will happen to economic growth over the **next 12 months in general** (not considering external factors)? The options are growth, decline and levelling off.

For each graph, you do not have to choose only one option (i.e. growth, decline, levelling off) and can assign different probabilities to different options (i.e. 50% probability of growth, 40% probability of decline and 10% probability of levelling off).

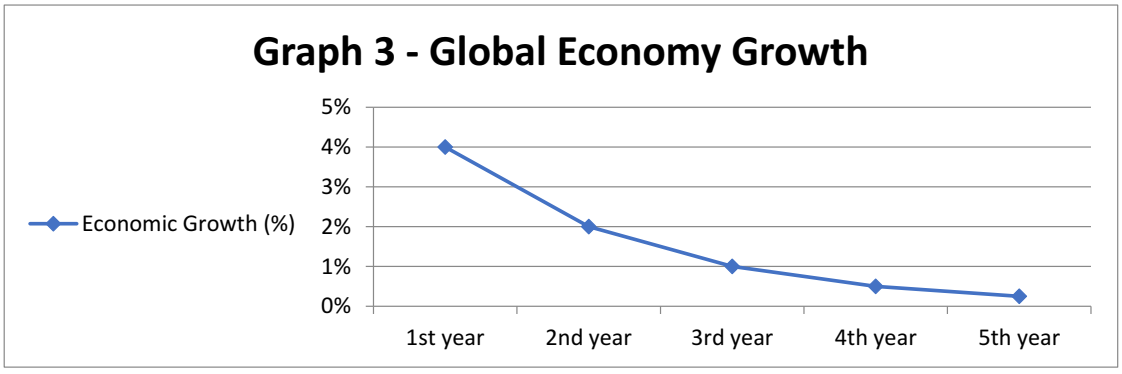
The sum of each of your probability estimates must always equal 100% and will be calculated automatically. If you would like to go with just one answer option, please put down 100% for that option.



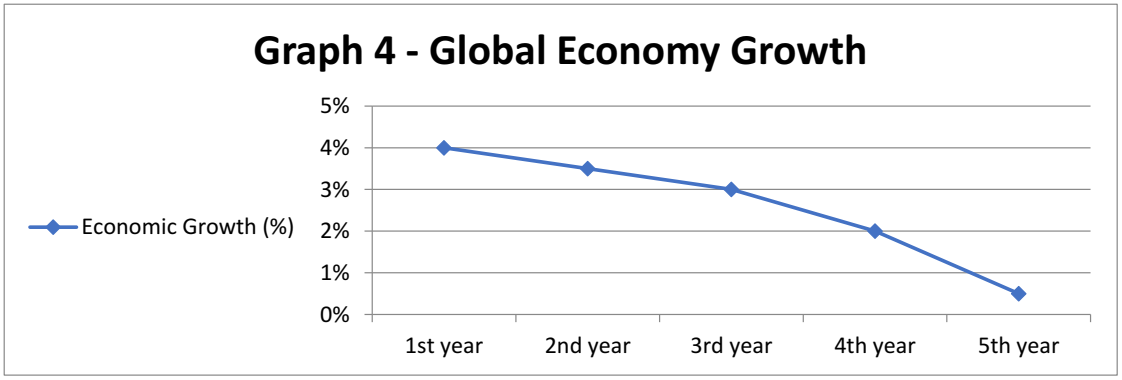
a) Economic growth will continue growing for the next 12 months (___%)
b) Economic growth will decrease in the next 12 months (___%)
c) Economic growth will level off (stabilise) in the next 12 months (___%)
= 100% (automatically calculated summary)



a) Economic growth will continue growing for the next 12 months (___%)
b) Economic growth will decrease in the next 12 months (___%)
c) Economic growth will level off (stabilise) in the next 12 months (___%)
= 100% (automatically calculated summary)



a) Economic growth will continue growing for the next 12 months (___%)
b) Economic growth will decrease in the next 12 months (___%)
c) Economic growth will level off (stabilise) in the next 12 months (___%)
= 100% (automatically calculated summary)



a) Economic growth will continue growing for the next 12 months (___%)
b) Economic growth will decrease in the next 12 months (___%)
c) Economic growth will level off (stabilise) in the next 12 months (___%)
= 100% (automatically calculated summary)

This next section focuses specifically on issues related to COVID-19 and its overall impact on the economy over the next **12 months** (especially in terms of change). How would you generally describe COVID-19 in terms of the listed adjectives on a 7-point scale?

For example, if you believe COVID-19 to be a 'human induced event', please put (1), otherwise, please put (7) for 'event arising from the environment'

Human-induced event	1	2	3	4	5	6	7	Event arising from the environment
Insufficient knowledge & understanding	1	2	3	4	5	6	7	Sufficient knowledge & understanding
Danger	1	2	3	4	5	6	7	Opportunity
Unpredictable consequences	1	2	3	4	5	6	7	Predictable consequences
Good change	1	2	3	4	5	6	7	Bad change
Slow rate of change	1	2	3	4	5	6	7	Rapid rate of change