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Personality, trait EI and coping with COVID 19 measures

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ABSTRACT

The study views the preventive measures undertaken by government to combat COVID 19 as stressor for individuals, and examines how individuals’ personal traits including emotional intelligence and personality factors influence their coping strategies. The concept of trait EI is used in this study to understand its relationship with personality factors and their respective effects on the opted outcomes. Coping strategies in this study are categorised into task, emotion and avoidance-oriented coping. The results show that emotional intelligence is significantly related to all coping strategies whereas only certain personality factors make unique variances. When both emotional intelligence and personality are in the same equation, with the latter being controlled, the former shows incremental variance and the influence of personality factors is reduced. Detailed discussion of these findings and implications for policy makers and researchers are highlighted and conclude the paper.

1. Introduction

Covid 19 is a respiratory infection and recurrent disease that has been determined as a pandemic in March 2020. Every country takes similar curative and preventive measures to prevent the spread of Covid 19 infections and protect lives. The former includes developing vaccinations and other medical means. The latter primarily refers to government interventions including imposing lockdown, curfew, and social distancing. The preventive measures are crucial to reduce the chances of infection and the spreading of diseases. This pandemic has a very taxing detrimental impact on people in particular and society at large, affecting almost every aspect for individuals, businesses, industries, and almost countries.

The pandemic not only endangers human life but also encumbers their daily life. The severity of a pandemic and its associated uncertainty become a stressor that affects individuals’ mental health (Fiorillo and Gorwood, 2020; Holmes et al., 2020; Pfefferbaum and North, 2020). When dealing with stressors from the external environment such as disease outbreaks or natural disasters, each individual undertakes different coping strategies and behavioural response (Taha et al., 2014). Protection Motivation Theory (PMT) provides a helpful context for apprehending how individuals will react to health hazards such as pandemics and suggests that individuals’ drive to defend themselves from a health risk by assessing the risk and undertaking protective behaviours [1]. Numerous studies have examined how individuals cope with health-related stress (e.g., Carr and Umberson, 2013; Folkman, 2011; Krueger and Chang, 2008) and what measures may be effective to prevent the health risk. Government interventions are imperative preventive measures to control the spread of the virus. These measures are widely and intensively broadcasted in the media with the intention to reinforce the importance of behavioural compliance by individuals [2]. However, such extension and intensity also become the major source of stressors leading to anxiety and exorbitant distress for individuals (Wheaton et al., 2012). How well individuals cope with such stress has a significant impact on their mental health and wellbeing [3]. Very limited research has attended to understand how these preventive measures are perceived as stressors and how individuals cope and respond to these stressors rather than the pandemic per se.

Coping denotes efforts to either ease the individual emotional anxiety provoked by the stressor or modify the source of environmental anxiety (Duangdaao and Roesch, 2008). Personality traits affect how one perceives external stressors, including health crises, thereby contributing to the diverse responses to outbreaks (Hill, Turiano, Hurd, Mroczek, and Roberts, 2011). Personality traits determine the individual differences in cognitive, emotional, and behavioural performance (e.g., Ref. [4–6], and hence can influence personal responses to health-related stress (e.g., pandemics). Previous research such as Jokela et al. (2013), Kern and Friedman (2011), and Turiano, Chapman, and Mroczek (2015)

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indicates that individual personality traits are associated with health status, and are antecedents of health behaviours. Gaygısız et al. (2012) reveal that general activity, interest levels, and impulsiveness can result in behavioural changes regarding the later stages in the A/H1N1 virus outbreak. Impulsiveness might be linked to both positive and negative behaviours as impulsive people are less likely to plan their actions. Also, tourists who are resistant to external crises such as terrorism and influenza pandemics score significantly higher extraversion (Hajibaba et al., 2015). Nevertheless, a research void is evident that no studies have examined how personality may influence individuals’ coping strategies for government interventions.

Since coping is an emotion-driven effort to manage stress, individuals’ emotional abilities manifested in emotional intelligence (EI) may shape the coping outcome. EI refers to an individual’s ability to perceive, understand, use, and manage emotions of oneself and others and has been reported to influence stress coping (e.g., Ref. [7]). Since its official inception into the psychology domain in the early 1990s, EI has been extensively discussed and debated in the relevant literature over the last three decades. The debate is centred on whether this construct should be conceptualised as a personality trait or an intelligence (8–10). Petrides and his colleagues (2001; 2007; 2016) proposed a via media approach and introduced trait and ability EI concepts based on how this construct is measured to boost sporadic pessimism in EI research. Prentice [9] has provided a thorough review of this approach and anything relating to EI, including, inter alia, conceptualisation, modelling, measurement, and construct validities. In sum, trait EI is related to personality, and measured by self-reporting, whereas ability EI is subsumed into the intelligence domain and assessed by objective measurement. For the purpose of this study, trait EI is opted for discussion.

Consistent with the foregoing discussion, this research examines how individuals’ personality and EI are related to coping strategies for COVID19-related preventive measures. The study views these measures as a stressor and understands how individuals cope with this stressor and how their personality and emotional ability affect their coping strategies. This examination provides insights into stress management and the effectiveness of government intervention. The following section reviews the relevant literature and presents hypotheses for the proposed relationships. The methodology of testing these hypotheses will be outlined, followed by presenting data analysis and results. The paper is concluded with discussion and implications of the research findings.

2. Literature review

2.1. Coping strategies

Lazarus and Folkman [11] defined coping strategies as continuously varying cognitive and behavioural attempts to handle certain stresses that go past the current resources of an individual. This definition implies coping strategies comprise efforts required to handle new situations and occurrences that are likely to be demanding and threatening. Lazarus [12] reasoned that stress contains several processes, including the process of perceiving a threat, thinking of a potential response to the threat, and coping by executing that response. This conceptual analysis of coping and stress formed a starting point for this research. Consistent with this conceptualisation, this study views government interventions manifested in preventive measures (e.g., lockdown, social distancing) as the stressors that entail deliberate effort to manage (coping) in order to minimise the health-associated risk and cope with living a restricted life.

According to Morales-Rodriguez and Perez-Marmol (2019, p. 2), coping strategies are “efforts to regulate emotions, behaviours, cognitions, psychophysiology, and environmental aspects in response to the stress of everyday events”. As such, the extent to which a specific strategy is effective or not depends on whether an individual identifies the situation as threatening [13]. People who are more positive tend to utilize more effective strategies; yet, in unmanageable circumstances, they are inclined to employ ineffective strategies such as submission to the challenge [14]. Folkman and Lazarus [15] and Lazarus and Folkman [11] differentiated among two types of coping: problem-focused and emotion-focused coping. The former is focused on solving a problem or changing the cause of the stress, e.g., problem solving, information searching, and problem-focused assistance. The latter is exemplified by individuals’ attempting to normalize negative emotions accompanied with a stressor by participating in certain activities such as seeking social-emotional support, self-blame, denial, and wishful thinking.

In an effort to classify the different coping strategies, other researchers have used terms such as ‘approach’ and ‘avoidant’ strategies (e.g., Ref. [16]. Approach strategies are strategies that tackle a problem by handling the stressor (e.g., seeking advice and social support) whereas, avoidant strategies try to diminish the undesirable emotions by avoiding the stressor (e.g., withdrawal, wishful thinking). According to Smith et al. [17] and Cohan, Jang, and Stein [18]; of the several coping strategies exploited to process and manage stress, three have been highly researched, including task-oriented coping, emotion-oriented coping, and avoidance-oriented coping. This study opted for this classification.

In the case of COVID 19, the virus itself as a health stressor entails people to take up medical and non-medical measures (e.g., washing hands, wearing masks) as individual mandatory tasks to minimise infection. Whilst they can be effective preventive measures, the government interventions impose limitations and restrictions on people’s daily lives (e.g., shopping, exercising, socialising, entertaining), which may elicit individuals’ different types of coping. Some may perceive these measures as indications of uncertainty towards length and scale of such restrictions, as interruptions to their daily routines, which may result in emotion-oriented coping. Others may view these measures as an opportunity for them to spend more time with family and on themselves, hence opt for more task-oriented coping. The option of a coping strategy is largely dependent on personal traits and individuals’ emotional abilities (aka, EI) [7,19].

2.2. Personality and coping strategies

Personality traits have been widely recognized as determinants of individual differences in cognitive, emotional, and behavioural performance (e.g., Ref. [4–6]. The Five-factor model of personality, often dubbed as the Big Five [20], namely, extraversion, agreeableness, conscientiousness, openness to experience, and neuroticism, can be used to express the most prominent features of personality, and has been validated and used across different cultures and different settings for decades [21]. Research shows that some personality characteristics are associated with the proneness to undergo undesirable and pessimistic emotions as a reaction to distresses [22]. For example, Zanini and Forns [23] showed a strong relationship between avoidance coping and anxiety trait while examining the impact coping on personality and behavioural problems of 558 adolescents from Spain. Personality traits can also be a noteworthy predictor of coping style and post-traumatic stress disorder signs [24–26]. Although the big-five model has become widely accepted worldwide, a comparatively limited number of researchers have explored the function of these five personality traits in coping, especially in coping with pandemics.

Openness to Experience (O). People high on O are viewed as curious, original, intellectual, imaginative, artistic, creative, innovative, and flexible (curious, intellectual, imaginative, creative, innovative, and flexible). McCrae and Costa [27] established that individuals high on O are more likely to employ persistence, positive thinking, retraction and escaping, and emotional articulation as a way of coping with stressors. Hooker et al. [28]; on the other hand, found no relationship between O and coping. Hooker et al.’s study explored the impact of O on coping for individuals giving care to their spouses that have dementia. O’Brien and Delongis [29] argue that this could have been due to the fact that variances between people high on O and those low on O are not influenced by such a confined group of stressors. Folkman et al. [30] argue that since people high on O are highly inventive and resourceful, they might
be projected to be better copers. This is in line with Williams et al.’s (2009) study findings, in which they investigated the relationship between O and stress exposure and recovery. They observed that individuals that were high on O had lower blood pressure reactivity. They further established that life stress was linked to reduced sleep levels for individuals low on O, but not for those high on O.

**Conscientiousness (C).** Individuals high on C have been are considered to have the propensity to be careful, responsible and dependable, organized, efficient, hard-working, and achievement-oriented [21,31]. Hooker et al. [28] observed that individuals who were high on this trait utilize more problem-focused coping strategies as opposed to emotion-focused strategies. Best and Both [32] confirm that support-seeking coping was expected from individuals high on C. Carvalho, Pianowski, and Gonçalvez [33] also found conscientiousness to be linked with engagement with handwashing and social distancing.

**Extraversion (E).** Extravers need stimulation. Researchers state that extroverts are very energetic, ambitious, talkative, optimistic, confident, outgoing, and reward-seeking (e.g., Ref. [22,34]). Carvalho, Pianowski, and Gonçalvez [35] research findings indicate that extraversion affects a person’s engagement with advised Covid-19 quarantine procedures. Studies have shown that individuals higher on E are more prone to using problem-focused coping than individuals who are lower on E [27,28]. They are also inclined to engage in less avoidance; rather, they are more likely to employ support seeking and positive thinking.

**Agreeableness (A).** People high on this trait are helpful, good-natured, courteous, cooperative, sympathetic, trusting, and forgiving. A study by Hooker et al. [28] investigated the role of A on coping and found those high on this trait usually cope through pursuing support from others, instead of adopting other forms of emotion-focused coping strategies such as self-blame and wishful thinking. Best and Both [32] examined the relationship between personality and coping styles and collected data from 271 females and 96 males and found that individuals low on A used support-seeking coping. Yildiz et al. [35] also examined the relationship between personality traits and coping strategies of patients with Hashimoto’s Thyroids and found higher agreeableness to be predictive of emotion-focused coping styles.

**Neuroticism (N).** Individuals who are high on N are typically neurotic, nervous, insecure, fearful, and anxious [21,36]. Eichel et al. [37] investigated the impact of personality traits on psychological aftermaths of COVID-19 using a sample of 23,137 people from six European countries. They found that N was strongly linked to stress and isolation, affirming the need for necessary interferences for individuals high in N by offering them appropriate coping methods. Kroenecke et al. [38]; using a German sample of 1609, reported that those high in N underwent greater negative influence and distress in their daily lives throughout the Covid-19 pandemic. Fauerbach, Lawrence, and Schmidt [39] found that disaster survivors with neurotic personalities had more negative emotions following the disaster. A study of a Dutch sample by Murakami and Murakami [40] established a substantial negative relationship between N and job-related pressures and stresses. Several researchers maintained that individuals that are high on N have a lower probability of taking part in problem-focused coping, and are more likely to engage in emotion-focused coping like avoidance and blaming themselves [28,41]. In agreement, Boyes and French [42] also found participants of their study that were high on N to be more involved in emotion-focused coping. Moreover, Pearson et al.’s [43] results also imply individuals high on N that experience psychological distress experienced as a consequence of a racist incident is correlated with engaging in avoidant and self-critical coping strategies. Consistent with the foregoing discussion, the following hypotheses are offered:

**2.3. EI and coping strategies**

EI denotes the ‘ability to monitor one’s own and other’s feelings and emotions, to discriminate among them, and to use this information to guide one’s thinking and actions’ [44]; 189. Salovey and Mayer [44] identify four main dimensions of EI: the ability to appraise and express of one’s own emotion (self-emotional appraisal); the ability to understand and recognise others’ emotions (others’ emotional appraisal); the ability to regulate one’s own emotion which enables quick recovery from psychological distress (regulation of emotion); and, the ability to make use of emotions to improve performance (use of emotion) [45]. The four domains are related and function hierarchically [9].

Research at large has established that persons with high EI are more competent of achieving progress on a variety of results such as higher engagement, higher organizational commitment, job and service performance, venture and organizational performance, and academic performance, lower levels of burnout and cynicism, lower turnover intentions, and improved psychological health (e.g., Ref. [46,47]; Prentice and King, 2010; [48–51]. EI is specifically relevant to the context of health-related crises, which often lead to very emotionally aggravating issues relevant to affected families [52,53].

Previous research has suggested links between EI and coping. Matthew and Zeidner [54] advocate that effective handling of stressful situations is fundamental to EI. Taylor [55] argued that individuals who have higher levels of EI are better capable of controlling their emotions and dealing with challenges they face more successfully. Bar-On [56] found positive correlations between EI and task-oriented coping. Austin et al. [57] also showed that both emotion and task-focused coping are associated with EI. Researchers revealed that people with higher EI utilize approach-oriented coping strategies, and individuals low on EI employ avoidance oriented coping strategies [58].

Given that EI has four ability domains. Each may have a different effect on how individuals cope with stress. Research has shown that self and other-emotion appraisal is significantly related to proactive coping [59,60]. Other researchers argue that coping is more related to the regulation of emotions (Compsas et al., 2014; [61]. Ong and Thompson [62] observed that an individual’s ability to regulate his or her emotion by reevaluating the situation is a useful method of coping with circumstances that are considered stressors. Use of emotion is also believed to affect coping strategies used. In a study directed by Lazarus and Folkman [11]; Pelletier [63] observed that family members of organ donors felt several different emotions and utilized different coping strategies. Ke and Barlas [64] investigated the relationship between trait emotional intelligence, early maladaptive schemas, and coping styles and they observed that lower levels of trait emotional intelligence were linked with a higher possibility for maladaptive coping in response to early maladaptive schemas. Consistent with the above discussion, the following hypothesis is offered:

H2 EI is significantly related to coping strategies, and each EI dimension (self-emotion appraisal, other-emotion appraisal, regulation of emotion, use of emotion) has a different effect on coping strategies.

**2.4. Personality, EI and coping strategies**

EI has been extensively discussed in the literature. This concept has been conceptualised as an intelligence (Salovey and Mayer, 1997), a personality trait, or a mix of the two (Bar-On, 1998; Goleman, 1995; 1998). The three models are predominant in the relevant literature and also cause confusion as what EI exactly is. This confusion leads to the birth of ability EI and trait EI suggested by Petrides and Furnham [65]. Furnham et al. (2016) proposed that EI through self-report measure should be operationalised as a personality trait, embedded within the personality framework, referred to as trait EI, while the measurement through performance tests as a cognitive ability, referred to as ability EI.
They further stated that trait and ability EI should be distinguished on the assessment methods, not on the elements of the conceptual model. For instance, the emotional intelligence scale (EIS) developed by Schutte and her colleagues in 1998 is a self-report measure, hence classified as trait EI, albeit based on the ability model developed by Salovey and Mayer [44]. Moreover, Furnham et al. (2016) found Trait EI to be generally significantly related to personality factors and proposed that individual disparities in trait EI are a constant forecaster of an individual’s behaviour through the life span. The authors also stressed on the importance of trait EI training as it has several benefits including improved mental well-being, enhanced life satisfaction, more happiness, an improved quality of life, a reduction in psychological problems, better physical health and is even likely to enrich the quality of both marital and social relationships.

Subsumed under the personality domain, trait EI should not only explain variance in outcome variables that have been accounted for by personality, but also demonstrate incremental validity in these outcomes (see Brackett and Mayer, 2003; [7]). Studies have shown that trait EI indeed explained additional variance over and above the personality measure in some criterion variables such as support, leadership (Van Dan Zee et al., 2004), and attitudes towards organizational change (Vakola, Tsaousis, and Nikolau, 2003), service performance [8,10], loneliness and social stress (Chapman and Hayslip, 2005), as well as coping [66,67]; Ke and Barlas, 2020). For example, O’Connor et al. [67] examined the validity of the short form trait EI questionnaire in task-stimulated stress setting with a sample of 225 volunteers and found that the trait EI projected low negative affect and elevated task performance using more emotion focused coping. They further stated that trait EI improves performance in circumstances and conditions that are perceived as stressful by regulating and controlling negative emotions. These results are consistent with Sieglein et al.’s [68] findings, which showed that trait EI had consistent incremental effects beyond the Big Five and coping strategies. Consistent with these studies, the study offers the following hypothesis:

H3 EI has a significant incremental variance in coping strategies over and above personality factors.

3. Methods

3.1. Sample

Since the COVID-19 was originated in China where government interventions (lockdown and social distancing) were enforced to control the spread of the virus. This was our pilot study to understand individuals’ coping strategies and their influencing factors. The data were collected with Chinese residents who were aged 18 and lived in different provinces, and who understood the impact of COVID 19 and the government interventions. The survey was posted on the most popular Chinese social media platform - WeChat. A snowball sampling was deployed to reach beyond the researchers’ social network with an intention to access a larger sample.

3.2. Instruments

EI was measured by Law, Wong, and Song’s (2004) self-report EI scale (WEIS) that is based on the ability EI model (see Brackett and Mayer, 2003). This scale has been widely used and cited in the literature with great reliability and validity. The original WEIS contains 16 items (statements), and four dimensions. These four dimensions are labelled as self-emotion appraisal (SEA), other-emotion appraisal (OEA), use of emotion (UOE), and regulation of emotion (ROE). Each dimension has four items. The dimension SEA includes items, “I have a good sense of why I have certain feelings most of the time” and “I have a good understanding of my own emotions”. The dimension OEA items include, “I always know my friends’ emotions from their behaviour”. Items such as “I always set goals for myself and then try my best to achieve them” are included in the UOE dimension. The dimension ROE items include “I am able to control my temper so that I can handle difficulties rationally.”

Items were measured on a five-point Likert scale, with 1 indicating strongly disagree, and 5 strongly agree. The reliabilities were 0.93 for SEA, 0.93 for OEA, 0.94 for UOE, and 0.95 for ROE.

Coping strategies were measured by adapting Carver, Scherier, and Weintraub’s [13] multidimensional scale to understand how respondents cope with the government’s preventive measures for COVID 19. Specific coping strategies include active coping (e.g., I take additional action to try to get rid of the problem), planning (e.g., I try to come up with a strategy about what to do), seeking social support for instrumental reasons (e.g., I try to get advice from someone about what to do), seeking social support for emotional reasons (e.g., I talk to someone about how I feel), positive reinterpretation & growth (e.g., I look for something good in what is happening), behavioural disengagement (e.g., I give up the attempt to get what I want), mental disengagement (e.g., I turn to work or other substitute activities to take my mind off things), and alcohol-drug disengagement (e.g., I drink alcohol, in order to think about it less). Consistent with the suggestion by Ref. [17] and Cohen, Jang and Stein [18]; we grouped these coping strategies into three categories: task-oriented coping (i.e., active coping and planning), emotion-oriented coping (i.e., seeking social support for instrumental reasons, seeking social support for emotional reasons, and positive reinterpretation and growth), and avoidance-oriented coping (i.e., behavioural disengagement, mental disengagement, and alcohol drug disengagement). Items were measured on a five-point Likert scale, with 1 indicating strongly disagree, and 5 strongly agree. Please note that we have also collected individuals’ coping strategies with the pandemic. Their measures also had good validity, and the results of hypotheses testing for coping strategies with the pandemic were quite similar to those for coping strategies with the government’s preventive measures.

Personality was measured by ten items from Gosling et al. (2003) (i.e., two items for each of the five dimensions of personality). Items including “is outgoing, sociable” and “is reserved” (reversed) for extraversion, “is generally trusting” and “tends to find fault with others” (reversed) for agreeableness, “does a thorough job” and “tends to be lazy” (reversed) for conscientiousness, “has an active imagination” and “has few artistic interests” (reversed) for openness, and “gets nervous easily” and “is relaxed, handles stress well” (reversed) for neuroticism. Items were measured on a five-point Likert scale, with 1 indicating strongly disagree, and 5 strongly agree.

3.3. Data collection procedure

A pilot study with 30 Chinese residents was undertaken prior to distributing the formal survey. The pilot study was to assess the timing, appropriateness, and clarity of the questionnaires. The formal survey was conducted online through WeChat. WeChat has more than one billion users monthly in China for messaging, one-stop shopping, and playing games. This platform can reach the target population in various regions and locations. In total, 468 complete responses were received and deemed to be sufficient sample size to conduct meaningful statistical analysis for the research hypotheses. Participants’ demographic information is shown in Table 1. Participants had different levels of age and education. The majority of them were single, and about three-fourths of them had annual incomes below 80,000 RMB.

3.4. Common method variance

Both ex-ante and ex-post remedies were implemented to minimise response errors and examine common method variance (Lindell and Whitney, 2001; Podsakoff et al., 2003). First, validated scales were used and thoroughly checked with the relevant researchers and experts in the field. Second, participants were informed that there were no right or wrong answers. Third, to minimise response bias, items measuring
certain constructs were distributed in different sections to avoid identical responses. Harman’s single factor test was performed first to assess common method bias (Podsakoff et al., 2003). The results showed that eight factors were present, and the first factor explains 38.37% of the variance. Second, confirmation factor analysis (CFA) procedure was conducted to check the model fit for one-factor and multiple-factor models (Iverson and Maguire, 2000). The one-factor model (χ² = 15841.16, p < .001, CFI = 0.43; TLI = 0.40; RMSEA = 0.18) has a very poor model fit compared to the 12 factors model (χ² = 2714.05, p < .001, CFI = 0.93; TLI = 0.92; RMSEA = 0.06). The last procedure was to control for the effect of an unmeasured latent factor and to compare the item loadings with and without adding an unmeasured latent methods factor (Podsakoff et al., 2003). No great differences between two sets of loadings (all less than 0.01) were identified.

4. Data analysis and results

4.1. Confirmatory factor analysis

EI has been viewed as a first-order [9] as well as a second-order factor (Law et al., 2004). For this study, we opted for both for hypothesis testing with the first-order factor for understanding the relationship between each dimension and coping strategies, and with second-order factor for testing incremental variance testing [10]. Both factor structures in this study have acceptable model fit indices. The first-order model has good model fit: χ² = 319.23, d.f. = 98; CFI = 0.97; TLI = 0.97; RMSEA = 0.07. The path coefficients between the indicators and their respective first-order factors were significant at the 0.05 level. We also examined the second-order factor structure by conducting a one-factor CFA on the average scores of the four first-order constructs. The model fit was χ² = 36.17, d.f. = 2; CFI = 0.97; TLI = 0.91; RMSEA = 0.08. All the path coefficients were significant at the 0.05 level. These results show that EI has good construct validity.

We then assessed the validity of coping strategies with government interventions. The second-order CFA, including 3 s-order constructs, has acceptable model fit: χ² = 1865.50, d.f. = 397; CFI = 0.91; TLI = 0.90; RMSEA = 0.08. The path coefficients between the indicators and their respective first-order factors were significant at the 0.05 level. In addition, all the path coefficients between the second-order construct and its three dimensions were significant at the 0.05 level. We also examined the second-order factor structure by conducting a CFA, including three constructs on the average scores of their first-order constructs. The model fit was χ² = 167.86, d.f. = 17; CFI = 0.94; TLI = 0.90; RMSEA = 0.08. All the path coefficients were significant at the 0.05 level. These results support modelling three coping strategies as second-order constructs. Loading, Cronbach’s alpha, composite reliability, and average variance extracted (AVE) are shown in Table 2. The correlations among the proposed variables are present in Table 3.

4.2. Hypotheses testing

Previous research shows that some demographic variables (i.e., age, gender, and education) are related to individuals’ coping strategies [69–73]. In this study, these variables are controlled to understand how personality and EI influence the outcome variables. We first assessed how coping strategies differ across these demographic variables. To facilitate analysis, we first code participants into different groups. For gender, male was coded as 0, and female was coded as 1. For age, we coded those between 18 and 35 as 0 (the young group), those between 36 and 55 as 1 (the middle group), and those above 56 as 2 (the old group). For education, university education was coded as 1, while the rest were coded as 0. One-way ANOVA and t-test were conducted. The results in Table 4 show that the overall coping strategies and the three coping strategies were scored higher for older group. However, the male counterparts were more inclined to take avoidance-oriented coping than the female. Individuals with university education were less likely to engage in avoidance-oriented coping. The results show that people at different demographic groups rated coping strategies differently. It is plausible to control their potential variance in the proposed outcome variables (coping strategies).

H1 proposes that the five-factor personality is significantly related to coping strategies, and each personality factor (O, C, E, A, N) has a different effect on coping strategies. The results (Table 5) show that openness had a significant positive effect on task-oriented and emotion-oriented coping while negatively related to avoidance-oriented coping. Conscientiousness is positively related to emotion-oriented coping and negatively to avoidance-oriented coping. On the other hand, neuroticism is positively related to avoidance-oriented coping.

H2 proposes that EI is significantly related to coping strategies, and each EI dimension (self-emotion appraisal, other-emotion appraisal, regulation of emotion, use of emotion) has a different effect on coping strategies. The results show that overall, EI has a positive effect on task-oriented coping and emotion-oriented coping (Table 6), surprisingly, also on avoidance-oriented coping. When testing the relationship between each EI dimension and coping strategies, self, other-emotion appraisal, and use of emotion are significantly related to task-oriented and emotion-oriented coping strategies. Surprisingly, other-emotion appraisal is positively related to avoidance-oriented coping. Nevertheless, regulation of emotion is not related to any of coping strategies, contradicting to what has been reported in previous studies.

H3 proposes EI explains incremental variance over and above personality factors. Consistent with the approach to testing the incremental validity of EI in Prentice and King [10]; both personality factors and EI were entered in the regression equation in a hierarchical order with personality being the first. For comparison, the results for this hypothesis testing are also present in Table 5. The testing shows that EI did explain significant incremental variance manifested in significant R² change values. Interestingly, Openness and Conscientiousness were no longer significantly related to task and emotion-oriented coping strategies when EI was in the equation. Neuroticism was still negatively related to avoidance-oriented coping. H3 was supported.

5. Discussion

This study views government interventions manifested in mandatory preventive measures for controlling the spread of COVID 19 as a stressor and examines whether individuals’ personality and EI influence their...
Confirmatory factor analyses results.

| Items | Loading | Alpha | CR  | AVE  |
|-------|---------|-------|-----|------|
| Planning |         |       |     |      |
| AC4: I take direct action to get around the problem. | .80   |     |     |      |
| AC2: I concentrate my efforts on doing something about it. | .84   |     |     |      |
| AC3: I do what has been done, one step at a time. | .79   |     |     |      |
| AC4: I take direct action to get around the problem. | .87   |     |     |      |
| Others |         |       |     |      |
| Mental disengagement |         |       |     |      |
| BD3: I admit to myself that I can’t deal with it, and quit trying. | .90   |     |     |      |
| MD4: I reduce the amount of effort I’m putting into solving the problem. | .92   |     |     |      |
| MD1: I turn to work or other substitute activities to take my mind off things. | .73   |     |     |      |
| Alcohol-drug disengagement |         |       |     |      |
| AD1: I drink alcohol, in order to think about it less. | .94   |     |     |      |
| AD2: I drink more alcohol, in order to think about it less. | .95   |     |     |      |
| AD3: I smoke in order to think about it less. | .99   |     |     |      |
| E i |         |       |     |      |
| Self-emotion appraisal |         |       |     |      |
| I have a good sense of why I have certain feelings most of the time. | .81   |     |     |      |
| I have good understanding of my own emotions. | .91   |     |     |      |
| I really understand what I feel. | .94   |     |     |      |
| I always know whether or not I am happy. | .87   |     |     |      |
| Others’ emotion appraisal |         |       |     |      |
| I always know my friends’ emotions from their behaviours. | .87   |     |     |      |
| I am a good observer of others’ emotions. | .91   |     |     |      |

Table 2 (continued)

| Items | Loading | Alpha | CR  | AVE  |
|-------|---------|-------|-----|------|
| Task-oriented coping |         |       |     |      |
| I am sensitive to the feelings and emotions of others. | .87   |     |     |      |
| I have good understanding of the emotions of people around me. | .87   |     |     |      |
| Use of emotion |         |       |     |      |
| I always set goals for myself and then try my best to achieve them. | .88   |     |     |      |
| I always tell myself I am a competent person. | .86   |     |     |      |
| I am a self-motivated person. | .93   |     |     |      |
| I would always encourage myself to try my best. | .91   |     |     |      |
| Regulation of emotion |         |       |     |      |
| I am able to control my temper and handle difficulties rationally. | .93   |     |     |      |
| I am quite capable of controlling my own emotions. | .95   |     |     |      |
| I can always calm down quickly when I am very angry. | .87   |     |     |      |
| I have good control of my own emotions. | .92   |     |     |      |

5.1. Personality, EI and coping strategies

To understand the influence of personality and EI on coping strategies, age, gender, and education were controlled in the analysis. However, mean comparisons did show that older people tend to opt for proactive coping such as task and emotion-oriented strategies. Both males and females can be task oriented. However, females are more inclined to seek emotional support, and males are more avoidant prone or engaging in drinking and hedonistic behaviours. These findings are not consistent with those in prior research reporting the senior and female are more likely to take precautious and protective behaviours. Older people may see them have more responsibilities to protect their families. Similarly, females are perceived to be more nurturing and caring, and naturally would take a more positive approach to deal with preventive measures. Whilst education does not make different in the task and emotion-oriented coping, less educated people tend to take avoidance approach, and engage in drinking and other hedonistic behaviours to cope with the lockdown and other preventive measures, as shown in this study.

Among the five personality factors, only openness was significantly related to three categories of coping strategies. Openness is reflective of being creative, adventurous, and innovative. Its significant variance in proactive coping is plausible. The pandemic status quo and its preventive measures may be unique. People with open mind may view these as new challenges and proactively seek remedies (e.g., new hobbies, beneficial activities) to enrich their life experience. These people tend to be less likely to take avoidance approach by engaging in alcohol and hedonistic behaviours as this study shows that openness is negatively related to avoidance-oriented coping. This finding is consistent with that in Williams et al. [74]. Conscientiousness in this study is positively related to emotion-oriented coping but negative to avoidance coping. Since conscientiousness is reflective of traits associated with being hardworking and achievement oriented, people with a high level of
Table 3
Correlations and squared root of AVEs.

|            | AC  | P   | SSI | SSE | PR  | BD  | MD  | AD  | SEA | OEA | UOE | ROE | O   | C   | E   | A   | N   |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| AC         | .82 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| P          | .74 | .91 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SSI        | .62 | .74 | .91 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SSE        | .60 | .70 | .79 | .92 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| PR         | .59 | .78 | .72 | .69 | .93 |     |     |     |     |     |     |     |     |     |     |     |     |
| BD         | .35 | .31 | .31 | .25 | .89 |     |     |     |     |     |     |     |     |     |     |     |     |
| MD         | .40 | .46 | .49 | .47 | .60 | .80 |     |     |     |     |     |     |     |     |     |     |     |
| AD         | .19 | .11 | .10 | .15 | .04 | .52 | .38 | .97 |     |     |     |     |     |     |     |     |     |
| SEA        | .41 | .54 | .50 | .63 | .26 | .37 | .07 | .88 |     |     |     |     |     |     |     |     |     |
| OEA        | .41 | .52 | .57 | .59 | .25 | .37 | .13 | .74 | .88 |     |     |     |     |     |     |     |     |
| UOE        | .43 | .53 | .53 | .62 | .24 | .28 | .05 | .71 | .64 | .80 |     |     |     |     |     |     |     |
| ROE        | .36 | .44 | .49 | .50 | .19 | .25 | .07 | .68 | .61 | .73 | .92 |     |     |     |     |     |     |
| O          | .17 | .20 | .13 | .24 | .10 | .08 | .16 | .25 | .20 | .23 | .20 | .20 |     |     |     |     |     |
| C          | .15 | .18 | .12 | .23 | .15 | .24 | .19 | .35 | .33 | .32 | .32 |     |     |     |     |     |     |
| E          | .05 | .04 | .01 | .02 | .10 | .09 | .06 | .26 | .12 | .12 | .12 |     |     |     |     |     |     |
| A          | -.12 | -.14 | -.09 | -.06 | -.03 | -.07 | -.11 | -.20 | -.15 | -.12 | -.33 | -.14 | -.36 |     |     |     |     |
| N          | .08 | .03 | .06 | .07 | .02 | .08 | .13 | .07 | .02 | .08 | .09 | .02 | .07 | .17 | .07 | .07 |     |

Note: AC = Active coping, P = Planning, SSI = Seeking social support for instrumental reasons, SSE = Seeking social support for emotional reasons, PR = Positive reinterpretation & growth, BD = Behavioural disengagement, MD = Mental disengagement, AD = Alcohol-drug disengagement, SEA = Self-emotion appraisal, UOE = Use of emotion, ROE = Regulation of emotion, O = Openness, C = Conscientiousness, E = Extroversion, A = Agreeableness, N = Neuroticism.

*p < .05, **p < .01.

Table 4
The effect of demographic variables on coping strategies.

| Age          | Task-oriented coping | Emotion-oriented coping | Avoidance-oriented coping |
|--------------|----------------------|------------------------|--------------------------|
| Young:       |                      |                        |                          |
| 18–25        | 3.76                 | 3.85                   | 3.08                     |
| Middle:      |                      |                        |                          |
| 36–55        | 3.93                 | 3.90                   | 3.13                     |
| Old: 56 above|                      |                        |                          |
|              | 4.05                 | 3.99                   | 3.32                     |

ANOVA: F = 5.26, p < .01, η² = .02

Gender

|            | Task-oriented coping | Emotion-oriented coping | Avoidance-oriented coping |
|------------|----------------------|------------------------|--------------------------|
| Male       | 3.85                 | 3.82                   | 3.21                     |
| Female     | 3.84                 | 3.94                   | 3.05                     |
| T-test     | t = -1.8, p < .05, Cohen’s d = .01 | t = -2.05, p < .05, Cohen’s d = .18 | t = 2.24, p < .05, Cohen’s d = .20 |
| Education  |                      |                        |                          |
| Bachelor   | 3.85                 | 3.85                   | 3.20                     |
| Bachelor above | 3.83                 | 3.92                   | 3.03                     |
| T-test     | t = -3.0, p < .05, Cohen’s d = .03 | t = -1.15, p < .05, Cohen’s d = .11 | t = 2.10, p < .05, Cohen’s d = .20 |

EI and coping strategies with government interventions.

|            | Task-oriented coping | Emotion-oriented coping | Avoidance-oriented coping |
|------------|----------------------|------------------------|--------------------------|
| EI         |                      |                        |                          |
| Gender     |                      |                        |                          |
| Control variable |                 |                        |                          |
| Gender     | .00                 | .09                    | .09                      |
| Age        | .01                 | .00                    | .05                      |
| Education  | -.02                | .02                    | -.08                     |
| R²         | .32                 | .45                    | .09                      |
| EI dimensions |                  |                        |                          |
| SEA        | .17                 | .24                    | .13                      |
| OEA        | .23                 | .29                    | .21                      |
| UOE        | .25                 | .28                    | .01                      |
| ROE        | -.02                | -.06                   | -.04                     |
| Control variable |                  |                        |                          |
| Gender     | -.01                | .08                    | -.09                     |
| Age        | .02                 | .01                    | .05                      |
| Education  | -.02                | .01                    | -.08                     |
| R²         | .33                 | .47                    | .11                      |

*p < .05, **p < .01, ***p < .001.

Table 5
Personality and coping strategies with government measures.

| Personality   | Task-oriented coping | Emotion-oriented coping | Avoidance-oriented coping |
|---------------|----------------------|------------------------|--------------------------|
| Openness      | .05                 | .14                    | .07                      |
| Conscientiousness | .04                | .09                    | .06                      |
| Extroversion  | .01                 | -.02                   | .01                      |
| Agreeableness | -.10                | -.08                   | .02                      |
| Neuroticism   | .09                 | .05                    | .06                      |
| EI            | .55                 | .67                    | .41                      |
| Control variable |                  |                        |                          |
| Gender        | -.01                | .00                    | .01                      |
| Age           | .13                 | .06                    | .02                      |
| Education     | .00                 | .14                    | .06                      |
| R²            | .33                 | .07                    | .45                      |
| Δ R²          | 25                  | -.38                   | .15                      |

*p < .05, **p < .01, ***p < .001.
from family and relatives. This finding is contrasting to those in Hooker et al. [28]; who reported that conscientious individuals are less prone to engage in emotion-oriented coping. People with a high level of neuroticism tend to be nervous and anxious. The level of being neurotic can be exacerbated by external stress, such as the pandemic. Since vaccination has not been successfully developed, there is no time limit for implementation of the preventive measures, which are perceived as restrictions to people’s daily life. Neurotic individuals can be pessimistic about the development of the situation. The best approach to dealing with such uncertainty for them is to avoid and indulge in hedonistic behaviours reflected in avoidance coping.

EI is significantly related to all three coping strategies. EI in this study was measured by four dimensions, namely, self-emotion appraisal (SEA), other-emotion appraisal (OEA), utilisation of emotions (UOE), and regulation of emotions (ROE) based on the ability model. When analysing how each dimension made unique variance in coping strategies, the results show that the first three dimensions were significantly related to task and emotion-oriented coping. Task-oriented coping refers to how individuals’ proactively plan and seek to engage in positive conducts. Emotion-oriented coping is reflective of seeking support from family and friends. The preventive measures undertaken in this pandemic may be unprecedented for most people, especially if there is no definite time of easing lockdown measure. Such uncertainty can cause fear and anxiety. Those with a high level of SEA and OEA which indicate perceiving emotions of oneself and others tend to appreciate this situation and identify suitable tasks to cope with the lockdown, as shown in this study. Lockdown and social distancing also limit social activities. Family and relatives can be a good source of dealing with such restrictions as reflected in emotion-oriented coping. UOE is also important as this dimension indicates that individuals with a high level of UOE are more goal-oriented and confident in what they opt to do. They may view these preventive measures as an opportunity to engage in hobbies that they were unable to in normal situations and spending more time with family.

In the case of avoidance coping, only OEA explains a significant variance. Avoidance coping is reflective of a passive approach to a stressful situation, and avoiding the stress by engaging in drinking. Individuals with a high level of OEA manifest in understanding the emotions of others who may express distress and other negative emotions towards these preventive measures. Emotions are contagious. The appraiser may be affected by such emotions and mimic others’ attitudes and behaviours such as passive coping and drinking. Interestingly ROE is not significantly related to any coping strategies. This dimension indicates the ability of managing one’s own emotions. Coping strategies refer to actions taken to cope with pandemic combating measures. This finding may indicate that managing emotions is simply reflective of maintaining internal peace without engaging in any activities.

5.2. Incremental variance

When EI and personality variables were entered in the same regression, surprisingly, openness and conscientiousness are not significantly related to task and emotion-oriented coping strategies. This finding can be interpreted as that the two personality factors are highly correlated with EI. This interpretation was supported as the correlation values between these variables in Table 3 were significant. The measure that was opted for this study to assess EI is reflective of individuals’ personality traits rather than emotional abilities. EI is classified as intelligence that should be distinguished from personality traits and measured by objective indicators. However, the EI studies are inundated with self-reporting EI in the relevant literature. This conundrum has been resolved by induction of trait and ability EI proposed by Petrides and his colleagues (e.g., 2001; 2016). The key difference between the two is that the former is more related to personality traits, which can be self-reported, whereas the latter is associated with the intelligence domain, and can only be assessed objectively. The finding in this study confirmed the concept of trait EI that is more related to personality traits though based on an ability model (e.g. Ref. [65,66,75]). The significant incremental variance explained by trait EI conforms to what has been reported in Ref. [8,10] albeit the criterion variable is different.

6. Implications

The study is intended to understand how people cope with preventive measures undertaken to combat the pandemic COVID 19 and examine whether their EI and personality may influence their coping strategies. The preventive measures in this study indicate government interventions, including lockdown and social distancing, for controlling the spread of the virus. This study integrates government policing, crisis management, and psychology and hence contributes to these disciplines. Whilst these government preventive measures are intended for managing the virus, these restrictions affect people’s daily lives and their mental wellbeing. How they cope and what they do to cope with these restrictions have implications for public policy research and crisis management literature.

The study shows that personal factors are important in their coping strategies and behaviours. In particular, EI has a most significant impact on individuals’ positive and proactive coping strategies (i.e., task and emotion-oriented coping). Only certain personality factors are significantly related to coping strategies. These findings provide a fresh perspective on how personality and individual traits can be incorporated into shape public policy and crisis management research. Managing a severe crisis like a pandemic may not be attributed to government policy and regulation per se. Individuals play a significant role in the effectiveness of implementing these policies. On the other hand, prior research on EI and personality primarily focus on their impact on individual performance, success, and wellbeing. Although some studies have examined their relationship with coping (e.g., Montes-Berges and Augusto, 2007; [7,76], the contexts were mostly limited to the work context. This study extends to crisis management literature, and reveals how EI and personality can shape individuals’ coping strategies towards government policies.

The findings that personality factors have little influence on coping strategies when entering in the same regression equation with EI confirm the trait EI concept proposed by Ref. [65,66]. The EI measure opted for this study was based on an ability model, nevertheless tested by self-reporting. Hence, the self-assessed ability measure is more related to personality traits and are highly correlated to personality factors. Given the coping strategies are emotionally connotated, EI is deemed to account for more of these strategies and associated behaviours. The values of significant R square change indicate that EI explains incremental variance than personality factors. This result confirms that EI is different from personality and provides incremental validity as an independent psychological construct. This finding is consistent with that in Petrides, Perez-Gonzales, and Furnham [66]; and Prentice and King [8,10].

The study also has several practical implications for policymakers and relevant practitioners. Since personality factors and demographic variables are significantly related to coping with the pandemic interventions, the government and authorities should segment citizens based on these characteristics and implement these interventions progressively to minimise side effects and potential damages to the public. As numerous reports show that these measures affect people’s mental wellbeing, and mental health can affect how they behave, for instance, engaging in abnormal behaviours or criminal conduct, it is imperative for the policymakers and the relevant authorities to identify appropriate means to enhance the public’s mental wellbeing. Since EI has a significant impact on positive coping strategies and is proved to be trainable, training can be provided to residents who have difficulty coping with these restrictions and interventions to prevent further damage to themselves or the local communities. On the other hand, age, gender, and education play important roles in their coping. The relevant
7. Limitations and future research

A few limitations must be acknowledged in this research. First, although popular, self-reporting EI is never ideal or well-recognized in EI research. We understood this limitation yet opted for such a measure as no funding was generated for this research. Ability EI measure can be costly with a large sample cohort. This assessment is also lengthy and might generate a low response rate. Such consideration determined the use of a self-reporting measure. The scale used in this study may not represent the trait EI domain. This method has certain merits but also some limitations on generating a sample cohort that is reflected in the researchers’ social network. Random sampling would provide a better understanding of the proposed relationships in this 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.

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