Responding to uncertainty caused by Covid-19

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Abstract. The COVID-19 pandemic that has spread to almost all countries in the world, including Indonesia, has caused a multitude of socioeconomic uncertainties in various aspects of life. The present study aims to describe responses to coronavirus-related uncertainties, particularly responses from people in early adulthood. The sample consisted of 166 individuals (38 males and 128 females), aged 20–40 years, from 12 provinces in Indonesia including West Sumatra, Special Capital Region of Jakarta, West Java, West Nusa Tenggara, and South Sulawesi among others. Participants completed the uncertainty response scale via Google form. The results showed that participants perceived that COVID-19 has caused uncertainties mainly in the education and economy sectors. The cognitive uncertainty of all participants was found to be at a high level. Almost all participants also reported a high desire for change, and the results vary on emotional uncertainty. In addition, job status underlies differences in emotional uncertainty and desire for change, but not for cognitive uncertainty. Conclusions are discussed with highlights on methodological limitations and the need for further research related to psychological outcomes of uncertainty.

1. Introduction

COVID-19 was confirmed by WHO on 31 December 2019 in Wuhan, China. In the beginning, this virus was known as an endemic disease in China [1]. However, in mid-February 2020, the WHO announced a public health emergency status of international concern and also confirmed cases in more than 23 countries outside China. Based on information published on the Indonesian Ministry of Health’s website (kemenkes.go.id), the first case of COVID-19 was found in Indonesia on 2 March 2020. There were 6,248 confirmed cases until 18 April 2020, with 631 recovered cases and 535 casualties in Indonesia (BNPB, 2020).

The COVID-19 emergency is rapidly evolving around the world and has impacted human life to an astounding degree, especially in Indonesia that is considering a developing country prone to social and economic instability. The most significant impact can be seen in the health sector, in which the number of infections continue to rise, and the increasing number of deaths remain a threat to society at large. With slow referral systems, lack of medicinal treatment, limited access to healthcare, unavailability of vaccines, as well as the lack of resources and healthcare facilities in some parts of the country, efforts to cure patients and prevent transmission is a difficult and complex matter in the island state. Moreover, the economic impact has also been substantial due to the lockdown policy or large-scale social restrictions [2]. People who rely on daily income, such as traders, laborers, and other contract employees, have found it difficult to meet basic needs. As reported on the Jakarta Post, an estimated 2.8 million workers have been affected by the COVID-19 outbreak in Indonesia due to non-functioning
operations in the workplace [3]. The impacts were also experienced by teachers and students regarding changes in the educational setting. Furthermore, various religious activities must also be adjusted according to health protocols and even many places of worship have been shut down to prevent transmission.

The number of social and economic changes that occurred due to COVID-19 and the lack of knowledge related to novel viruses have caused a wide scale state of uncertainty. People are uncertain about how long this condition will last, also how they and others should withstand one of the most historically unprecedented situations related to communicable diseases. Uncertainty and low predictability of COVID-19 has not only affected people’s physical health, but also people’s mental health to varying degrees [4]. This variation greatly depends on how individuals respond to conditions of uncertainty, whether they see it as obstacles or a window of opportunity. Casanova, Pacheco, Costa, Lawthom, and Coimbra (2019) explain that the way people respond to uncertainty or uncertain events is very important in terms of survival or mental endurance. When someone shows an intolerance response to uncertainty, studies have shown that they tend to feel negative emotions such as extreme fear and anxiety [5]; boredom and loneliness [6]; and depression [7]. On the other hand, if they generate a positive response, it is likely that their wellbeing will increase, and the solutions to various problems can be found [8].

How individuals respond, both emotionally and cognitively, will lead to behaviors that are shown in dealing with conditions of uncertainty. Greco and Roger (2001) found three main trends of individuals in responding to uncertainty, namely emotional uncertainty, desire for change, and cognitive uncertainty. Emotional uncertainty refers to the emotional response of individuals who consider uncertainty as a stressor, so it is closely related to anxiety and sadness. Emotional uncertainty responses are also associated with high levels of neurotic and low self-esteem, negative emotions and inability to handle stressful situations. This uncertainty will substantially worsen the situation as stress itself becomes an internal- and externally predominating element in times of uncertainty [9].

Meanwhile, research findings have pointed out that cognitive uncertainty responses are highly correlated with tolerance for ambiguity. This cognitive response explains a person's cognitive function in dealing with uncertainty by making plans, seeking clarification, and gathering information, as strategies to reduce or cope with uncertainty. Individuals will try to see various points of view regarding the possible changes related to COVID-19, as changes in school attendance systems, conducting businesses, etc. that all appear to have an uncertainty [10]. Desire for change refers to feelings of desire to make changes and something new and is also indicated by the significant correlation with impulsivity and social ability. Individuals who have the desire to change will not be break down by negative things caused by uncertainty, but rather they are more likely to try to enjoy the process of changing and adapting.

Based on the results of previous studies [11] COVID-19 has affected almost all aspects of life. To understand how the response was given by individuals to this uncertain situation is very essential, particularly for populations that live in countries with slow or ambiguous policy responses. The psychological response to the pandemic, the emotions involved in it, such as fear and anger, must be considered and observed as it may reflect society’s resilience or vulnerabilities in contributing to the population’s recovery [12]. Therefore, the present study aims to describe the responses to the uncertainty related to the novel coronavirus, with responses from people in early adulthood.

2. Method

2.1 Participant and procedure
The sample consisted of 166 individuals 38 [23%] males and 128 females [77%], aged 20–40 years (M= 27, SD = 5.99). They were recruited via web-based questionnaires and participated voluntarily (and a consent was provided in the questionnaire). The research was carried out using a Google form that was electronically distributed (sent to participant via whatsapp) to 12 provinces in Indonesia, such as West Sumatra, North Sumatra, Riau Islands, Jambi, Bengkulu, DKI Jakarta, West Java, and Central
Java, among others. Participants were asked to provide answers to measure how they responded to uncertainty, as well as basic demographic information (e.g., gender, age, questions related to COVID-19). The sample characteristics are shown in Table 1.

Table 1. Demographic information of the participants (total N = 166)

| Educational Background     | f  | %  |
|----------------------------|----|----|
| High School                | 22 | 13.3 |
| Diploma 3                 | 3  | 1.8 |
| Bachelor                  | 98 | 59  |
| Master’s Degree           | 41 | 24.7 |
| Doctorate                 |    | 1.2 |

| Job Status             | f  | %  |
|------------------------|----|----|
| Work                  | 84 | 51  |
| Does not Work         | 82 | 49  |

| Income Range       | f  | %  |
|--------------------|----|----|
| Not yet / not earning | 67 | 40.4 |
| ≤ Rp. 2.000.000    | 39 | 23.5 |
| Rp. 2.000.000 – Rp. 4.000.000 | 21 | 12.6 |
| Rp. 4.000.000 – Rp. 6.000.000 | 9  | 5.4 |
| ≥ Rp. 6.000.000 | 30 | 18.1 |

2.2. Measures

2.2.1 The Uncertainty Response Scale (URS). The uncertainty response (URS) was measured using a 48-item questionnaire developed by Greco and Roger (2001). This scale is distributed in a three-factor structure, 1) emotional uncertainty (considering the uncertain conditions as a threat or stressor, responding with anxiety and sadness, $\alpha = 0.924$, 15 items), e.g. “I feel anxious when things are changing”; 2) cognitive uncertainty (tendency to reduce uncertainty by making plans and gathering information, $\alpha = 0.911$, 16 items), e.g. “When facing an uncertain situation, I tend to prepare as much as possible, and then hope for the best”; 3) desire for change (the desire for change and enjoying the process of adaptation, $\alpha = 0.918$, 17 items), e.g. “I like to think of a new experience in terms of a challenge”. Responses are rated on a 4-point Likert scale (response range: never, sometimes, often, always). To complement the URS we included questions regarding their perception of COVID-19, the impact and what areas of their lives are most affected, also several open-ended questions which describe their knowledge on COVID-19.

2.3 Data Analysis

Descriptive analysis was conducted using SPSS 23 for Mac to generate inferences on participants’ responses to conditions of uncertainty. Each factor will be divided into three categories of emotional...
and cognitive uncertainty, namely low, medium, and high. The higher the emotional uncertainty, the higher negative emotions are shown. The higher the cognitive uncertainty, the higher the effort and thought processes are involved to overcome the problem, while the high desire for change indicates the greater desire to make changes in times of uncertainty. Independent samples t-test was also performed in each category to test for differences in responses based on work status.

3. Results and discussion

3.1 Participant’s perception about Covid-19
In general, most Participants reported that COVID-19 caused uncertainty in their lives, especially in the fields of education, economy, work, mobility/social and mental health. They also assume that the possibility or chances of being infected by COVID-19 are not too high. Participants also reported having sufficient understanding of COVID-19 as a disease and pandemic and also gathered information related to it (see Table 2).

3.2 Participant responses to uncertainty
Based on the results of the study, participants assumed that the COVID-19 pandemic caused uncertainty in various aspects of life, especially economics and education. Uncertainty is a period of anticipation of a situation that can cause harm and stress; the response shown varies according to how a person assesses and interprets the whole condition [13]. In addition, uncertainty is subjective in terms of what is being felt or experienced, but it is objective when related to information obtained [14]. Uncertainty that occurs due to natural disasters, epidemics, and economic crises can affect a person's mental health [15].

A majority of the participants showed high emotional uncertainty indicating that participants had high negative emotional responses to the uncertainty caused by COVID-19 (71.7 %), shown in Table 3. This can be demonstrated through feelings of sadness, fear, anxiety, depression, and feeling generally upset. Only a small number of participants did not report feeling negative emotions while under the uncertainty caused by the pandemic (5.4%).

Uncertainty and emotional affect are two basic aspects of human life and are closely related or inseparable, as emotions are shaped by perceived situations. Generally, uncertainty is perceived as negative, and in the context of this study, individuals will feel a variety of negative feelings in order to avoid the challenges that uncertainty presents in a pandemic. Various emotional reactions are part of an individual's effort to function in an adaptive manner, which serves as a form of anticipation of change. This means that emotional responses work as an appraisal process to overcome dangerous or challenging events [16]. There are several reasons that cause differences in one's emotional response to uncertainty, such as the biases related to information-processing (perception, interpretation, attention, etc.) [17]. However, these will not be discussed further in this paper as the study merely introduces perceptual responses as a groundwork for further research.

Furthermore, all participants showed high levels of cognitive uncertainty. This shows that when facing uncertainty they try very hard to find a way out and solve problems, and that they require planning, alternative solutions, and gathering the necessary information for decision-making for resolution purposes. Basically, humans can adapt to a situation of uncertainty, in which their cognitive control capacity allows them to understand the situation, develop plans, evaluate the effectiveness of the solutions, and predict what will happen later [18]. As explained by Enke & Graeber (2019), cognitive uncertainty is related to a person's subjective uncertainty about the optimal action that can be done, such as decision making with minimal risk. [19]
| Table 2. Participant’s perception about Covid-19 |
|-----------------------------------------------|
| F    | %       | Example Open-Question                          |
|------|---------|-----------------------------------------------|
|      |         |                                               |
| COVID -19 Cause Uncertainty                   |
| Yes  | 163     | 98.2                                          |
|      | 3       | 1.8                                           |
|      |         | Economy, Education, Work, Mobility, Mental health |
| No   | 3       | 1.8                                           |
|      |         |                                               |
| Searching for COVID -19 News                  |
| Not-often | 77 | 46.4                                      |
| Often  | 89     | 53.6                                          |
|      |         | Internet, Social-Media                        |
| Covid-19 Infected Possibility                |
| Impossible | 5 | 3                                           |
| Small chance | 69 | 41.6                                      |
| Maybe  | 73 | 44                                           |
| Very likely | 19 | 11.4                                      |
| Understanding of Covid-19                    |
| Do not understand | 3 | 1.8 | “trick” “Infectious diseases that have become pandemic” |
| Understand enough | 134 | 80.7 | “Viruses spread through droplets and attack the lungs” |
| Very understanding | 29 | 17.5 |                                               |
Table 3. Emotional Uncertainty Categories

| Emotional Uncertainty | F   | %   |
|-----------------------|-----|-----|
| Low                   | 9   | 5.4 |
| Middle                | 38  | 22.9|
| High                  | 119 | 71.7|

As for the third factor, desire for change, the results showed only 0.6% of participants were in the medium category, and other participants had a high desire to change (99.4%). Participants were open to experiences and changes caused by COVID-19. In dealing with uncertainty, people can also enjoy certain aspects of uncertainty itself (e.g. staying home and feeling reenergized), trying new things (e.g. new hobbies and activities), and things that change (e.g. more time spent with family, seeking new jobs) [20]. They will still be able to feel enthusiastic about making changes even though they are feeling stressed or experiencing other negative emotions. People who have the desire to change can usually be tolerant of changes due to uncertainty so they might even be able to convert the negative effects of uncertainty into positive outcomes [21].

Table 4. Cognitive Uncertainty and Desire for Change Categories

| Cognitive Uncertainty | f  | %   |
|-----------------------|----|-----|
| Low                   | 0  | 0   |
| Middle                | 0  | 0   |
| High                  | 166| 99.4|

| Desire for Change      | f  | %   |
|------------------------|----|-----|
| Low                    | 0  | 0   |
| Middle                 | 1  | 0.6 |
| High                   | 165| 99.4|

Furthermore, there are significant differences in the emotional uncertainty and desire for change factors based on work status. Data shows that the average emotional uncertainty of people who work is lower (M = 29, SD = 7.3) compared to those who have not worked (M = 32, SD = 7.4), t (164) = 2.5, p <.05). Data shows that the average desire for change of people who work is higher (M = 45.7, SD = 8.6) compared to those who have not worked (M = 42.8, SD = 7.3), t (164) = -2.3, p <.05).

4. Conclusion
The results showed that participants perceived that the COVID-19 pandemic caused uncertainty especially in aspects of educational and economic matters. Overall, all participants are in the high category of cognitive uncertainty. Furthermore, the desire for change factor is also experienced by almost all participants in the high category. Meanwhile, varying results were obtained for emotional uncertainty, although in general it remained at a high level. In addition, there are differences in emotional uncertainty and desire for change based on work status. This study cannot be considered
conclusively valid due to notable methodological limitations, although it does provide a brief illustration on how the pandemic-related uncertainty has affected society from the views of early adults. Firstly, because of the nature of self-report measures that are susceptible to reporting errors, in addition to the small sample size and sampling method that may lack representativeness of Indonesia’s population, the results of this study are weighed with an awareness of the high risk of bias. Considering the severity of the pandemic’s impact on Indonesia’s society, further research warrants an exploration of factors that helps improve our understanding of uncertainty as a risk factor on human functioning and society’s recovery. These may include the number of earning members in a family, financial and lifestyle information, and access to health services that may all serve as buffers to the negative outcomes that uncertainty brings.

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