Selecting Measures in the COVID-19 Crisis

THE EFFECT OF PERSPECTIVE AND INFORMATION STRUCTURE

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Abstract

During the COVID-19 pandemic, people are faced with a lot of measures which are meant to prevent the virus from spreading uncontrollably while still keeping society in a stable state. To make sense of the measures that we are all faced with, people have to weigh a lot of new information. This study examined whether the structuring of information and a person's perspective have an influence on how people evaluate the effectiveness of measures during the COVID pandemic. 121 participants received one out of three perspectives, as well as the same COVID-related information, which was put in either a structured or an unstructured way. Afterwards, they were asked to assess a total of 9 different measures, which could be categorised as 'Social', 'Economic', or 'Reducing Infections'. The results show that receiving structured information led to evaluating the 'Social' measures as more effective. The single perspectives did not lead to higher assessments of those measures which are more in favour of that particular party. However, those with the perspective mayor, who had to combine multiple perspectives, have significantly regarded the 'Economic' measures as more effective than those with the restaurant owner perspective. This could be explained by the restaurant owners being less optimistic about fighting the COVID crisis. We recommend including further perspectives and reminding participants throughout the study more of which perspective they were allocated to. Including more perspectives could ensure that the difference in perspectives is actually 'single vs. multiple' perspectives and does not relate only to those three perspectives that were chosen for this study. Further, we recommend visualising the information in the structured condition more, for example through the use of a map where the connections between bits of information are clearer.

1. Introduction

The current COVID pandemic is a complex and new situation affecting the whole world. Every country, every community, and every person is influenced by the appearance of this novel virus. Since the beginning of 2020, we all live in a state of uncertainty and insecurity. News channels, social media, and everyday conversation is coloured with COVID-related topics such as infection rates, measures taken or social distancing and isolation. The population is being bombarded with information from different experts and parties, some more reliable than others, and everybody has an opinion about the situation, possible solutions and the wrongdoings of others. In essence, this illustrates that there are a lot of different perspectives. However, people and even professionals have the tendency to stick to their own frames of reference. So, what can we do to help people broaden their scope? The aim of this thesis is to find out to what extent different perspectives and the structuring of information have an influence on the way we evaluate different measures for complex situations like the current COVID crisis.

1.1 Sense making

In order to be able to evaluate the measures that are proposed during the COVID crisis effectively, people have to search for information and make sense of it. According to Wilson's model of information behaviour, a person seeks for information if there is a certain 'need' that an individual wants to have fulfilled (Robson & Robinson, 2013). This can be a cognitive, physiological or emotional and affective need, for example the need to feel safe and protected from harm, or the need to be able to provide for one's family. In order to be able to fulfil this need, information has to be searched, such as information on how to protect oneself from getting COVID, or how and where to apply for financial help. This information seeking can happen in various ways, for instance through the use of media channels or various information systems, but also through discussion with other people and by exchanging information with them. After a person has searched and gained information, this information has to be processed by interpreting and making sense of it. According to Weick (1988), there are different aspects that influence how we make sense of new information and how we put them into our existing framework. One aspect of Weick's theory is that people's identity, the way persons are and evaluate themselves in relation to their environment, shapes the way they interpret events and information. During the current COVID pandemic, this means that the way we see ourselves will affect the way sense is made of the situation, and consequently how measures are evaluated. For example, persons working in the healthcare sector see themselves as a doctor or a nurse and

presumably weigh the information differently than someone who owns a restaurant; a doctor may, for example, weigh infection rate more heavily whereas a restaurant owner places more weight on business continuity. Especially during the COVID pandemic, people with different living situations are confronted with the states' measures in different ways, be they employees, officials, students, or if they are self-employed.

1.2 Pitfalls

During the process of sense making there are many pitfalls that an individual could fall into. Examples of such biases are framing, seeing patterns too easily or confirmation bias. This way people may see their need for information fulfilled from one particular perspective, without awareness of possible other ones. One way to overcome this is to take multiple perspectives into account. As Hall and Davis (2007) state, a person's exposure to "additional perspectives will broaden their information-gathering and decision-making scope, allowing for analysis that is more complete" (Hall & Davis, 2007, p. 1594). Therefore, taking more than one perspective into consideration will not only change which information is searched but also make it easier to analyse and understand the information that is collected. In the current situation this could mean that being in a position where one needs to make a well-informed decision, for example a mayor who is responsible for his citizens, it is necessary to consider the citizens' safety, their financial situation, but also their desire for social activities. Another possible pitfall is information overload, because during the current situation the topic of COVID is ever present, with different and often conflicting opinions (Rathore & Farooq, 2020). There are those who propagate the pandemic as "fake news" and demonstrate against the measures because they report the virus as just being an invention of the government to keep the population in line. But there are also those who report the ICU units as filled far above their capacity and talk about the danger of another wave of infection. If an individual is faced with too much information, this can result in attentional fatigue (Chiu, 2002). Because it is difficult to attend to a lot of information at once and the cognitive resources to do so are easily depleted over time, people are confronted with the problem which important cues to put their attention on (Christianson & Barton, 2021).

1.3 Information structuring

One way to reduce the pitfalls of information overload is by putting the information that is given into a causal structure. Information structuring would reduce the information overload and

perhaps give more room for a broader perspective (Kerstholt, 2006). Furthermore, it helps to better recognise the consequences of the actions or current measures, as well as understand and envision all the areas that are affected by specific measures. This way they can make a better-informed assessment. The structuring of information can be in some sort of visualisation, which helps discover knowledge more effectively and more quickly (Xiang, 2005). Visualising information is a strategy which is used in a lot of different situations where a large amount of data is available. Research has shown that when a person is in the process of making a decision, they are quickly overwhelmed when the amount of information and the complexity increase, leading them to ignore information in order to cope with the situation (Carrigan, Gardner, Conner & Maule, 2004). A study from Carrigan, et al. (2004) shows that participants looked at more of the available information when it was structured, which leads to the suggestion that reading structured information requires less cognitive capacity and is easier to comprehend. These findings are supported by another study from Siegrist, Langewitz, Mata, Maiori, Hertwig and Bingisser (2018), which showed that structuring information is beneficial for information retainment and comprehension if people had no to little pre-existing knowledge of the topic.

1.4 Present study

All in all, this current pandemic can be seen as a stressful situation for the whole society, independent of an individual's situation. People are overwhelmed by the huge amount of information available through various channels of media and by how to make sense of it without forming their opinion too quickly. In the present study various perspectives will be compared. These consist of two single perspectives, namely that of a restaurant owner and that of a police officer, as well as one perspective which combines multiple ones. This one represents a mayor, who has to consider the problem of the COVID crises from a more integral point. He has to take the perspectives of others, those he is responsible for, into account when he decides to tighten or loosen COVID measures. Therefore, it is his job to combine both single perspectives in order to ensure that his citizens are safe from infections, but also able to provide for their families. The purpose of this study is to test whether taking a single or multiple perspective and receiving structured information versus unstructured information influences the evaluation of success of measures taken during the COVID-19 crisis. Hypothesis 1 of this thesis is that evaluating the information from a single perspective, assessments are more in favour of that particular party. Hypothesis 2 is that taking multiple perspectives will lead to a better understanding of a broader range of measures, and hence a smaller gap between the evaluations

of the different measures. Hypothesis 3 is, that participants would find combining multiple perspectives more difficult. Hypothesis 4 states that since structured information is easier to assess effectively, the proposed measures should generally be assessed as more effective and lead to less difference in the evaluation of the measures. At last, hypothesis 5 is that participants rate the task as less difficult in the structured task condition.

2. Methods

2.1 Design

For this research, a 2x3 factorial design was used. The first factor is structure, with the conditions 'structured' and 'unstructured'. The second factor is perspective, including the conditions 'police', 'restaurant owner' and 'mayor'. Both variables were manipulated between participants. The distributions of the different perspectives across the participants can be considered quite even, with 37% receiving the perspective 'police', 25% received the perspective 'restaurant', and 38% of the participants received the perspective 'mayor'. Further, the condition structure was also quite equally distributed, with 54% 'unstructured' and 46% 'structured'.

The main dependent variable was the 'perceived effectiveness of the following measures':

- Closing stores
- Increasing police capacity to enforce compliance to the measures
- Keeping distance
- Imposing a curfew
- Local, small scale events for youths
- Subsidizing companies
- Wearing face masks
- Crisis communication to increase compliance
- Creative event organisation

Another dependent variable that was assessed is the perceived complexity of making the assessments about the effectiveness of the measures. The variable is composed of the three items 'It was complex to rate the measures', 'It took me a long time to decide' and 'It took a lot of effort to assess the measures', with a range of 0 to 4. Guttman's Lambda-2 for the three items was .57, meaning that 57% of the variance is due to true scores and 43% is due to error. Further, as can be seen in Table 1, a Pearson correlation revealed significant inter-item correlations

between all three items, ranging from r = .266, p <. 01 to r = .343, p <. 01. This shows that while the items correlate enough with each other to measure the underlying factor 'Complexity', they are unique enough to contribute to the variable. Therefore, the mean of the three items was used for the analyses.

Table 1

Correlations of the Complexity items

	M (SD)	It was complex	It took a long time	It took a lot of effort
It was complex	1.7 (1.2)	1		
It took a long time	0.9 (0.9)	.266**	1	
It took a lot of effort	1.2 (1.1)	.343**	.304**	1

Note. ** indicates p < .01

A further dependent variable was 'information awareness'. It ranged from 1 to 5 and is moderate for both the participants with the structured information (M=2.8, SD=.59) and also a bit higher for those with the unstructured information (M=3.2, SD=.56). However, participants only received the questions, which the variable is comprised of, to ensure that they read the structured or unstructured information they received carefully. Therefore, it functions mainly as a control variable and will not be included further in the analyses.

The last dependent variable was 'variability'. It was composed of the variance across the three factors.

2.2 Participants

137 people participated in the survey, with 16 participants disagreeing with the form of informed consent either prior to conducting the study or afterwards, when they were informed of the real purpose of the study. Therefore, the data that was used included 121 sets of data. The participants were gathered via various posts on Facebook, advertisements in the WhatsApp function 'status', via mail that several contacts of the researcher distributed across their workplace and friends, or via the BMS test subject pool SONA. The requirements to participate in the study were to be sufficiently capable of the English language and to be at least 18 years

old. The study was aimed at people between 18 and 99 years old, but the participants were considerably young, with a mean age of 28 and a standard deviation of 11.9. Further, more than half of the participants, 63.6% to be exact, indicated to be students.

Table 2

Demographics of the participants

	n (N = 121)	%	*M (SD)*
Age in years			28 (11.9)
Gender			
male	38	31%	
female	83	69%	
Occupation			
Student	77	63.6%	
Unemployed	1	0.8%	
Self-Employed	6	5%	
Employee	32	26.4%	
Pensioner	3	2.5%	
Other	2	1.7%	
Nationality			
German	88	73%	
Dutch	25	21%	
Other	8	6%	
Perspective			
Police	45	37%	
Restaurant	30	25%	
Mayor	46	38%	
Information Structure			
Unstructured	65	54%	
Structured	56	46%	

2.3 Materials

The participants were provided with 4 different blocks, which were shown to them in random order. Additionally, the participants in the unstructured condition received the sentences within one block in a randomised order. The content of the information was the same for the participants in both conditions. However, participants who received the structured information, were provided with sentences which built up from the previous ones by using linking expressions, such as ‘due to this’ or by directly stating an effect, e.g. ‘Less compliance with measures leads to more contacts’. This resulted in a causal structure. Furthermore, each sent

The participants were provided with blocks of information, which were presented in either a structured or an unstructured way. The different blocks of information were randomly ordered for all participants. The content

The content of the two did not differ, merely the presentation and the ordering of the sentences. In the 'structured' condition, the participants were presented with information that builds up from the previous sentence, therefore resulting in a causal structure of the paragraph. Participants in the 'unstructured' condition received the same information of the paragraphs. In the unstructured condition, the sentences within one paragraph were in a random order for each participant.

Table 3

The information in the two different structures

Structured	Unstructured
Block 1	
- An increase of infections will lead to more fear amongst citizens - Due to this fear, they will have less contact with others - Less contact will reduce mental health of the citizens - Reduced mental health may lead to more use of drugs - More use of drugs will give more nuisance of youth	- There are more infections - Citizens fear to get infected - Some citizens have less contact with others, but some also more - Mental health of the citizens is declining - There is more use of drugs - There is more nuisance of youth
Block 2	
- Closing stores will lead to more bankruptcy of companies - Bankruptcy of companies will lead to less employment - Less employment reduces disposable income of citizens - Less disposable income leads to less expenses	- Companies are closed - Several companies are bankrupt - There is less employment - Citizens have less disposable income - Citizens spend less money

- Less expenses leads to more bankruptcy (and less employment)

Block 3

- Less possibilities to go somewhere leads to boredom amongst youth
- Boredom amongst youth leads to tension in families
- Tension in families leads to less safe home environments
- Less safe home environments lead to more violence and abuse
- More violence and abuse results in increased societal unrest

- There are less possibilities to go somewhere
- Youths are more bored
- There is more tension in families
- More home environments are less safe
- Domestic violence and abuse is increasing
- There are signs of more societal unrest

Block 4

- A continuing lock-down leads to less public support
- Less public support leads to more expressions of dissatisfaction
- More expressions of dissatisfaction lead to less compliance with measures
- Less compliance with measures leads to more contacts
- More contacts lead to more infections

- The lock-down continues
- The public shows less support for the lock-down
- Citizens are more dissatisfied
- There is less compliance with the measures
- Some citizens have less contact with others, but some also more
- There are more infections

Furthermore, the participants were randomly allocated to one of three different perspectives (‘mayor’, ‘restaurant’, ‘police’). They received a short background story in order to provide them with information about the perspective that they should take for the duration of the study.

Table 4

The information of the different perspectives

Perspective	Police officer	Restaurant owner	Mayor
Information	Imagine you are a police officer. Your duty is to enforce the law and ensure the safety of society. You went to the police because already as a child you wanted to maintain law and order.	Imagine you are the owner of a small, but relatively successful restaurant. You have two children and a spouse you provide for. You always loved to cook and decided to start your own restaurant after finishing school and getting a degree. You are the chef in your restaurant and have 3 other employees.	Imagine you are the mayor of a small city. You won the elections last year with a wide margin against your opponent. You have grown up in this city and most people know and like you. You feel that your duty is to ensure the safety of the citizen and to provide job opportunities and perspective for them.

2.4 Procedure

Prior to the study, it was approved by the BMS Ethics Committee of the University of Twente on the 26th of March, 2021. The questionnaire was conducted via the website Qualtrics.com and distributed through WhatsApp, Facebook and mail to personal contacts of the researcher, as well as through the BMS test subject pool, SONA. Participants received a short introductory text about the background of the study, as well as part of the aim of the research. The information that the study aims to assess the effect of information structure on the evaluation of the different measures was withheld. Directly after this text, the participants received the consent form, to which they had to actively consent by choosing between the 'I agree' or 'I do not agree' options (Appendix A). After agreeing to the consent form, participants were asked 4 questions regarding their demographics, including age, gender, nationality, and occupation. Afterwards, they were randomly assigned to one out of three possible background stories to

create one of three perspectives. Then, participants received an introductory text to inform them that after careful reading of the following information, they would be asked to indicate their awareness of the information they had just read. This was done in order to ensure the careful reading of the sentences. They received either four blocks of unstructured statements or four blocks of structured statements. After each block, the participants were asked to indicate of how much of the information they were aware of, on a 5-point scale ranging from 'all' to 'none'. Then participants were asked to assess the effectiveness of different measures during the COVID-19 pandemic from the perspective that they were given at the beginning on a 7-point Likert scale ranging from 1= 'extremely ineffective' to 7= 'extremely effective'. In the end, they were asked to indicate their experience with assessing the measures, on three scales ranging from 0= 'strongly disagree' to 4= 'strongly agree' to the statements 'It was complex', 'It took a long time', and 'It was difficult'. Lastly, participants were informed of the withheld information and had to choose whether they want their data to be included or to be removed.

2.5 Measures

A Pearson correlation revealed sufficient evidence for underlying factors of the different measures. Each of the measures significantly correlated with at least one other measure. The weakest correlation was between the items 'Closing Stores' and 'Subsidising Companies', $r(119) = .20$, $p < .05$, while the strongest positive correlation was found to be between the measures 3 and 7, 'Keep Distance' and 'Face Masks', $r(119) = .533$, $p < .01$.

A factor analysis of the measures revealed, based on Kaiser's criterion with Eigenvalues > 1, three underlying factors. Factor 1 was comprised of 5 items reported on a 7-point Likert scale that explained 30.7% of the variance with factor loadings from .501 (Closing Stores) to .791 (Face Masks). The items were 'Closing Stores', 'Increase Police Capacity', 'Keeping Distance', 'Imposing Curfew', and 'Face Masks'. The factor was named 'Reducing Infections'. Cronbach's Alpha revealed acceptable reliability, $\alpha = .738$

A second factor was comprised of 3 items and explained 18% of the total variance with factor loadings from .509 to .858. The items were 'Local Events for Youths', 'Crisis Communication', and 'Creative Event Organisation'. This factor was named 'Social'. Cronbach's Alpha revealed questionable reliability, $\alpha = .578$.

Factor 3 was comprised of 1 single item that explained 12% of the total variance with a factor loading of .934. The item was 'Subsidizing Companies', and the factor was named 'Economic'.

The item ‘Crisis Communication’ had nearly equally high loadings on both factor 1 and factor 2, with factor loadings of .496 and .509. However, the item was allocated to factor 2, due to its higher loading, even though the difference is quite small.

Table 5

Factor loadings of the measures and their allocation to the different factors

	Factor 1	Factor 2	Factor 3
Factor 1: Reduce Infections			
Closing Stores	**.501**	-.163	**.439**
Increase Police Capacity	**.688**	.011	-.070
Keeping Distance	**.674**	.033	**.349**
Imposing Curfew	**.728**	.024	.129
Face Masks	**.791**	-.050	-.078
Factor 2: Social			
Local Events for Youths	-.209	**.778**	.020
Crisis Communication	**.496**	**.509**	.047
Creative Event Organisation	.143	**.846**	-.077
Factor 3: Economic			
Subsidizing Companies	-.201	.082	**.934**

Note. Factor loadings above .3 are in bold. The loadings which correspond to the chosen factors are in red.

3. Results

3.1 Descriptives

With a 2x3 factor study, there were 6 conditions. Despite setting equal allocation to the different perspectives and the information structure through the system of Qualtrics, the distribution of the participants varied between 12 for the condition Restaurant/Unstructured and 28 for Police/Unstructured. This unequal distribution happened due to the clean-up and deletion of 16 data sets. Those, who chose not to have their data included after they were being made aware of the real purpose of the study at the end of the survey, were evenly distributed across the conditions structure and perspective, as can be seen in Table 6.

Table 6

Distribution of the different conditions

	Perspectives		
	Police	*Restaurant*	*Mayor*
Structured	17 (3)	18 (1)	21 (4)
Unstructured	28 (2)	12 (3)	25 (1)

Note. The second value is the number of participants who chose not to have their data included.

The factor 'Reduce Infections' scored highest (M=5.2, SD=1.0), with the factor 'Social' (M=4.9, SD=1.1) coming second and 'Economic' (M=4.7, SD=1.5) in last place. With a possible score range of 1 to 7, all three factors at first glance seemed to score quite high throughout all the participants. Also, the mean of the variable 'Complexity' is quite low, with a mean of 1.3 and a standard deviation of .8, considering that the variable ranged from 0 to 4. This means that the majority of the participants did not consider the assessment of the measures to be complex or difficult. Further, the 'Variability' can also be considered low, with a mean of 1.3 and a standard deviation of 1.6. Therefore, the participants did not vary very much in their assessments of the different measures and assessed them as quite equally successful.

Further, a Pearson correlation was run for all dependent variables of the study. The 'Social' factor and the 'Variability' were found to be moderately negatively correlated, $r(119) = -.445$, $p < .01$. Also, the 'Economic' factors and the dependent variable 'Variability' were found to be negatively correlated, $r(119) = -.246$, $p < .01$. This means that when the scores on the factors 'Social' and 'Economic' increased, the variability decreased, meaning that factors were more equally evaluated.

Table 7

Descriptives and Correlations of the dependent variables

	M (SD)	Age	Reduce Infections	Social	Economic	Complexity	Variability
Age	28 (11.9)	1					
Reduce Infections	5.2 (1.0)	.040	1				
Social	4.9 (1.1)	.120	.100	1			
Economic	4.7 (1.5)	.154	.158	.083	1		
Complexity	1.3 (.8)	-.071	-.082	.062	-.099	1	
Variability	1.3 (1.6)	-.054	-.109	-.445*	-.246*	-.101	1

Note. * indicates $p < .01$

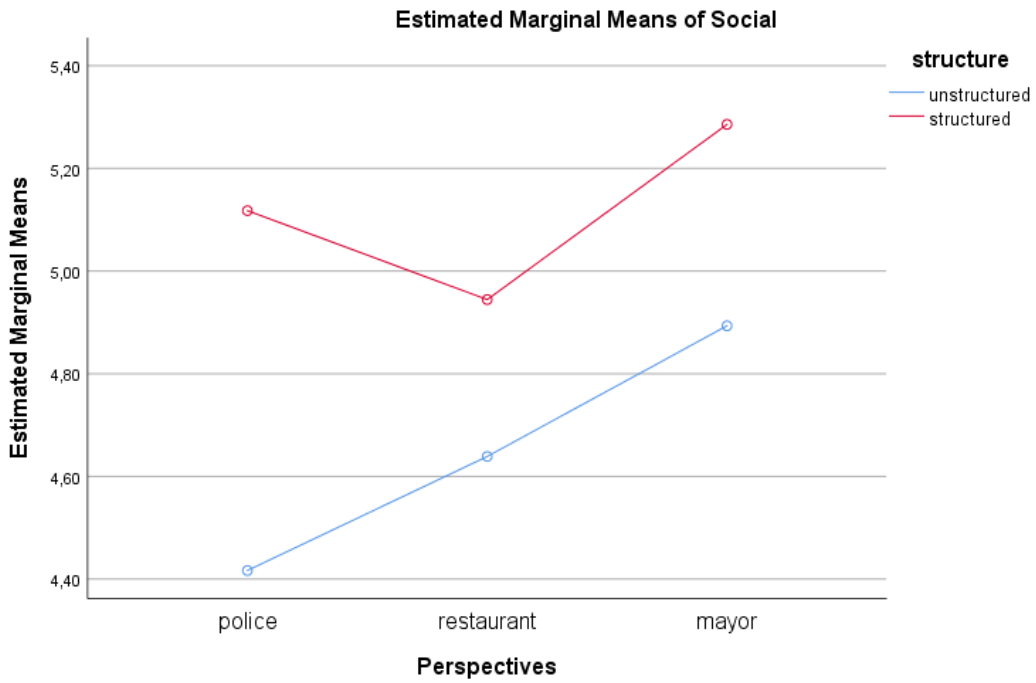
3.2 Assessment of effectiveness

Three separate one-way ANOVAs were conducted to compare the effects of the variables 'perspective' and 'structure' on the three factors 'Reduce Infections', 'Social', and 'Economic'. For the factor 'Reduce Infections', we found no main effect for perspective ($F(2, 115) = 2.18$, $p = .12$) or for structure ($F(1, 115) = .89$, $p = 0.35$). Also, there was no interaction effect ($F(2, 115) = .01$, $p = .99$). This means that the way the information was presented to the participants and the perspective they were asked to take did not have an influence on how participants rated the measures of the factor 'Reduce Infections'.

The second one-way ANOVA revealed a statistically significant main effect of information structure on the factor 'Social' ($F(1,115) = 5.23$, $p = .02$), but no main effect of perspective ($F(2,115) = 1.17$, $p = .32$). Also, there was no interaction effect between the variables 'structure' and 'perspective' on the factor 'Social' ($F(2, 115) = .35$, $p = .70$). This shows that the participants evaluated the 'Social' measures as overall more successful if they received the information in a structured way ($M=5.13$, $SD=1.1$) than if they received the unstructured information ($M=4.6$, $SD=1.1$), no matter their perspective. This can be seen in Figure 1.

Figure 1

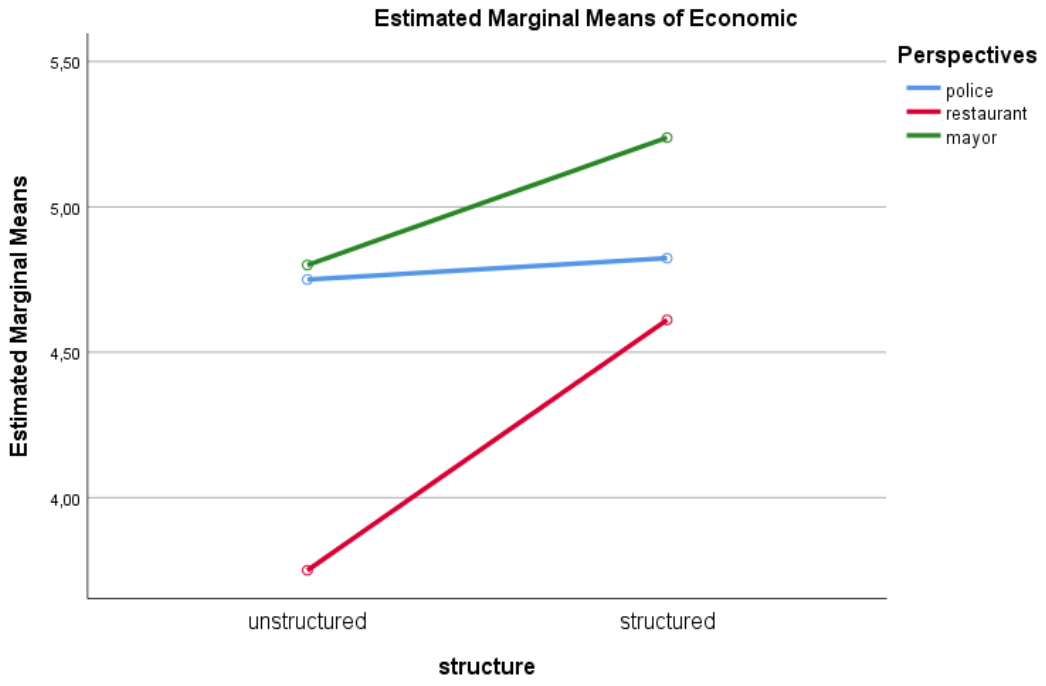
Estimated marginal means of the factor 'Social', divided by structure and perspective



The third one-way ANOVA revealed no significant main effect of ‘structure’ on the ‘Economic’ factor ($F(1, 115) = 2.84$, $p = .10$) and also no interaction effect between ‘structure’ and ‘perspective’ on the factor ($F(2, 115) = .65$, $p = .53$). However, there was a statistically significant effect of the ‘perspective’ on the items from the ‘Economic’ factor ($F(2, 115) = 3.1$, $p = .05$). A post-hoc test revealed that the perspectives ‘mayor’ and ‘restaurant’ differed significantly, at $p < .05$. The participants with the perspective ‘mayor’ scored higher on the items of the ‘Economic’ factor than those who were asked to take the perspective of the restaurant owner. Figure 1 illustrates this significant difference between the two perspectives. There was no statistically significant difference between the perspective ‘police’ and the other two perspectives.

Figure 2

Estimated marginal means of ’Economic’, divided by ‘structure’ and ‘perspectives’



3.3 Range of measures

Furthermore, it was hypothesised that participants who received the perspective ‘mayor’ would have a broader understanding of the measures and therefore rate them similarly. Therefore, to test whether the perspective ‘mayor’ has less variance across the scores on the assessment of measures than the other perspectives, a univariate analysis of variance was run, with variance over the three factors as the dependent variable. There was no statistically significant effect of ‘perspective’ ($F(2, 115) = .37$, $p=.69$) or ‘information structure’ ($F(1, 115) = .119$, $p=.73$), nor was there a statistically significant interaction effect ($F(2, 115) = .79$, $p=.46$). Therefore, it can

be concluded that the participants with the perspective ‘mayor’ did not evaluate the assessment of measures more equal than participants with the other perspectives did.

3.4 Complexity

Lastly, in order to assess whether the factors ‘perspective’ and ‘structure’ had an effect on how complex the participants rated the process of assessing the effectiveness of the measures, a one-way ANOVA with ‘Complexity’ as the dependent variable and the variables ‘perspective’ and ‘structure’ as the between-subjects variables was run. There was no significant effect of either ‘perspective’ ($F(2,115) < 1$), ‘structure’ ($F(1,115) < 1$), or a statistically significant interaction effect ($F(2,115) < 1$). Therefore, it can be concluded that there was no statistical difference in how complex participants found making the assessments.

4. Discussion

The purpose of this study was to find out whether perspectives and information structuring have an effect on selecting measures in the COVID-19 crisis. For this purpose, the participants of this study received one out of three different perspectives as well as either structured or unstructured information. The results of the analysis that followed were mixed - some surprising, some as expected, and some others not as expected.

The first hypothesis of this paper predicted that taking a perspective would influence which type of measures would be assessed as more effective. Three types of measures were distinguished: ‘Reduce Infections’, ‘Social’ and ‘Economic’. It was expected that participants with the perspective of the police officer would assess the measures of the factor ‘Reduce Infections’ as more effective, while those who took the perspective of the restaurant owner would rate the ‘Economic’ measures higher. However, that was not the case. One possible explanation could be that the measurement of effectiveness was not clear to some participants or that they differed in their view of what the effectiveness of measures means for them and especially for the perspective they were taking. Maybe it would have been better to ask participants which measures they would choose.

For some of the measures, we found an effect of perspective; the participants with the perspective ‘mayor’ assessed the measures of the ‘Economic’ factor as more effective than those who received the perspective of the restaurant owner. It could be that the measures were

rated higher because of the high amount of responsibility that a mayor feels over the people in his city. If his main objective is to keep people safe, it would make sense to rate a lot of the measures highly, because this would mean that most measures are implemented, which then leads to financial support for companies and businesses, which is necessary to keep the economy running in his city. In order to test this, a suggestion for future research would be to investigate which characteristics the participants would attribute to each separate perspective, prior to conducting the study, where the perspectives would be used. This way, it could be found out how participants see the jobs or positions. Instead of seeing the restaurant owner as focused mostly on their own business and the economic problem of keeping their head financially above water and running their business, participants could have focused on the family aspect of the provided background story in the study and place most importance on keeping one's family safe from COVID and getting down the infection rates so that they do not have to worry about the health of spouse and children. Another explanation for the study's findings could be that the effectiveness of the measures was interpreted differently from the various perspectives. In contrast to the mayor, who has a lot of influence on the measures, the restaurant owners might have been generally less optimistic about fighting the COVID crisis, especially after seeing a lot of businesses going bankrupt. While the participants with the perspective 'mayor' scored higher on the measures than those with the 'restaurant' perspective, they did not rate the measures as equally effective. Therefore, taking multiple perspectives into account did not lead to a broader understanding of a broader range of measures.

Another hypothesis stated that having to consider multiple perspectives, in this case by being put in the group 'mayor', is more difficult, takes more time, and is more complex. However, this hypothesis is rejected, as there was no difference in variance between the perspectives, so no unequal assessment of the measures. Therefore, the 'mayor' group took all three factors 'Reduce Infections', 'Social' and 'Economic' into account equally from all perspectives. Therefore, no difference in complexity would be expected.

Another hypothesis of this paper was that structured information is easier to assess effectively, so therefore the measures should all in all be assessed as effective, which would be shown by less variance in assessment across the measures and higher scores in the structured condition than in the unstructured one. On the basis of variance, this hypothesis has to be rejected. Participants who received the structured information did not assess the measures more equally. However, they did rate the measures higher than those participants who received the unstructured information. This result could not be attributed to complexity;

participants did not find it easier to assess the measures when they had received the information in a structured manner. Previous research had suggested that the structuring of information can be seen as a sort of visualisation and this makes it easier to understand complex relationships between the bits of information (Xiang, 2005). It also helps reduce the potential of information overload when faced with so much new and complex information that one does not know what to focus on (Carrigan et al., 2004). Instead of putting the information in text only, it might help to visualise the information additionally on a map, where the connections are made explicit and clear. Another explanation could be that people are currently being confronted with a lot of information in their daily life, and the information that we provided was already known to them. This can be seen in the above average scores on the 'information awareness' variable. Even though this variable was meant to just control that participants read the information of the study carefully, they indicated that most of the information that we provided was not new to them and they were already aware of it prior to the study. This could also explain the generally low scores on the 'complexity' variable. If they already are aware of the information, then it would not be too difficult to make assessments about the effectiveness of the measures.

4.1 Limitations

For future research, it would be suggested to include a broader range of participants. Considering that the majority of the participants in this study were students and the mean age was 29, which can be considered quite low, most of the participants probably do not have a family that they are the sole provider for yet, so they lack the actual experience of this responsibility which could have made it difficult to imagine the situation of a restaurant owner during the COVID pandemic. The same goes for the mayor and the police officer perspectives. Those are positions which include a large sense of responsibility, which could be difficult to imagine, especially if one has little experience in the work field.

Further, while the study was done with 137 participants, which seemed enough, there was a considerable number of participants who either before the study or after being informed about the real purpose of it, did not agree to the consent form or wanted their data to be removed. With 16 participants being removed from the data set this way, the initial random allocation to the different conditions seemed to suffer. It resulted in a somewhat unequal distribution, which varied between 12 and 28, so one condition had actually more than double the

participants than one of the others. This could be resolved by recruiting more participants, so that the ratio is better.

Another suggestion would be to find out how the participants understood the term ‘effectiveness of measures’. After conducting the study, it came to mind that participants could have understood ‘effectiveness’ in quite different ways. They could have considered it as ‘most effective in decreasing the number of infections’, ‘effective in bettering my own situation’ or even ‘effective for maintaining or supporting everyone’s satisfaction’. Knowing how the participants interpret the concept in regard to the COVID crisis, would make it easier to find out why the scores on the effectiveness of the measures did not turn out as expected. Further, more and different perspectives would be useful, both in the field of single perspectives, for example a health care worker, and additional perspectives which are meant to combine perspectives, as the ‘mayor’ perspective does. This would ensure that the differences in perspectives are actually ‘single vs. multiple’ perspectives and only mayor-related.

4.2 Conclusion

All in all, it can be said that even though the study did not completely show the results that were expected, it told a lot about the way perspectives and information structure influence the way the current COVID-19 measures are evaluated. It can be said that some perspectives reflect a more positive attitude towards being able to fight the crisis than others. Also, being confronted with information that is structured in a causal way, does not make the assessment easier, but the measures are assessed as more effective.

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Appendix A

Consent form to participate in a bachelor study from a student of the University of Twente

Please read this document carefully. Your signature is required for participation.

I understand and consent that:

1. I am 18 years old or older.

2. The questionnaire consist of XXX questions and will take approximately XXX minutes to complete.

3. I do understand the content and agree to contribute my data for the use of this research.

4. I understand that it is not possible to skip specific questions and that I can withdraw from this research at any time by closing the questionnaire without giving a reason. Additionally, in this case, the responses will be deleted within 24 hours.

5. My personal information will be anonymised to protect my privacy.

6. I agree that all my data can be evaluated and used for the research.

7. I have been given the guarantee that this research project has been reviewed and approved by the BMS Ethics Committee. For questions regarding any ethical issues in this survey, the secretary of the of the Ethics Commission of the faculty Behavioral, Management, and Social Science at the University of Twente can be contacted by the following e-mail address: ethicscommittee-bms@utwente.nl

In case of questions or ambiguities, the researcher Esther Rothlübbers (e.rothlubbers@student.utwente.nl) can be contacted.

I confirm that I read the informed consent form and agree with all listed conditions.

Appendix B

Selecting Measures in the COVID-19 Crisis

Start of Block: Default Question Block

Selecting Measures in the COVID-19 Crisis

The current COVID pandemic is a complex and new situation affecting the whole world. Every country, every community and every person has been influenced by the appearance of this novel virus. Since the beginning of 2020 we all live in a state of uncertainty and insecurity. News channels, social media, and everyday conversation is coloured with COVID-related topics such as infection rates, measures taken or social distancing and isolation.

The purpose of this study is to assess the relationship between information evaluation and the assessments of measures.

Consent form to participate in a bachelor study from a student of the University of Twente

Please read this document carefully. Your agreement is required for participation.
I understand and consent that: I am 18 years old or older. The questionnaire consists of 21 questions and will take approximately 15 minutes to complete. I do understand the content and agree to contribute my data for the use of this research. I understand that it is not possible to skip specific questions and that I can withdraw from this research at any time by closing the questionnaire without giving a reason. Additionally in this case, responses will be deleted within 24 hours. My personal information will be anonymised to protect my privacy. I agree that all my data can be evaluated and used for the research. I have been given the guarantee that this study has been reviewed and approved by the BMS Ethics Committee. For questions regarding any ethical issues in this study, the secretary of the Ethics Commission of the faculty Behavioral, Management, and Social Science at the University of Twente can be contacted by the following e-mail address: ethicscommittee-bms@utwente.nl.
In case of questions or ambiguities, the researcher Esther Rothlübbers (e.rothlubbers@student.utwente.nl) can be contacted.

I confirm that I read the informed consent form and agree with all listed conditions.

- ○ I agree.
- ○ I do not agree.

Skip To: End of Survey If Consent form to participate in a bachelor study from a student of the University of Twente Plea... = I do not agree.

End of Block: Default Question Block

Start of Block: Demographics

*

What is your age in years?

_____

What is your gender?

- ○ Male
- ○ Female
- ○ Non-binary / third gender
- ○ Prefer not to say

What is your nationality?

- ○ German
- ○ Dutch
- ○ Other _____

What is your occupation?

- ○ Student
- ○ Unemployed
- ○ Self-employed
- ○ Employee
- ○ Pensioner
- ○ Other _____

End of Block: Demographics

Start of Block: background story

For the rest of this study, please imagine that you are a police officer. Your duty is to enforce the law and to ensure the safety of the society. You went to the police because already as a child you have wanted to maintain law and order.
It is important that you assess the following information from the eyes of a police officer.

For the rest of this study, please imagine that you are the owner of a small, but relatively successful restaurant. You have two children and a spouse you provide for. You always loved to cook and decided to start your own restaurant after finishing school and getting a degree. You are the chef in your restaurant and have 3 other employees.
It is important that you assess the following information from the eyes of a restaurant owner.

For the rest of this study, please imagine that you are the mayor of a small city. You won the elections last year with a wide margin against your opponent. You have grown up in this city and most people know and like you. You feel that your duty is to ensure the safety of the citizen and to provide job opportunities and perspective for them.
It is important that you assess the following information from the eyes of a mayor.

End of Block: background story

Start of Block: In UN

In the following, you will be shown 23 effects that are observed in the current COVID-19 crisis. The information will be presented in blocks of 5-6 statements. Please read them carefully. At the end of each block you will be asked to what extent you were aware of the statements.

As a reminder: please assess the information from the perspective you were given before.

End of Block: In UN

Start of Block: UN 1

There are more infections

Citizens fear to get infected.

Some citizens have less contact with others, but some also more.

Mental health of the citizens is declining.

There is more use of drugs.

There is more nuisance of youth.

Of how much of this information were you aware?

- All
- A lot
- A moderate amount
- A little
- None

End of Block: UN 1

Start of Block: UN 2

Of how much of this information were you aware?

- All
- A lot
- A moderate amount
- A little
- None

Companies are closed

Citizens have less disposable income

Citizens spend less money

There is less employment

Several companies are bankcrupt

End of Block: UN 2

Start of Block: UN 3

Of how much of this information were you aware?

- All
- A lot
- A moderate amount
- A little
- None

The lock-down continues

The public shows less support for the lock-down

Citizens are more dissatisfied

There is less compliance with the measures

Some citizens have less contact with others, but some also more.

There are more infections

End of Block: UN 3

Start of Block: UN 4

Of how much of this information were you aware?

- All
- A lot
- A moderate amount
- A little
- None

There are less possibilities to go somewhere

Youths are more bored

There is more tension in families

More home environments are less safe

Domestic violence and abuse is increasing

There are signs of more societal unrest

End of Block: UN 4

Start of Block: In STR

In the following we will show you 23 effects that are observed in the current COVID-19 crisis. The information will be presented in block of 5-6 statements. Please read them carefully. At the end of each block you will be asked to what extent you were aware of the information.

As a reminder: please assess the information from the perspective you were given before.

End of Block: In STR

Start of Block: STR 4

A continuing lock-down leads to less public support.
Less public support leads to more expressions of dissatisfaction.
More expressions of dissatisfaction lead to less compliance with measures.
Less compliance with measures leads to more contacts.
More contacts lead to more infections.

Of how much of this information were you aware?

- ○ All
- ○ A lot
- ○ A moderate amount
- ○ A little
- ○ None

End of Block: STR 4

Start of Block: STR 3

Less possibilities to go somewhere leads to more boredom amongst youth.
Boredom amongst youth leads to tension in families.
Tension in families leads to less safe home environments.
Less safe home environments lead to more violence and abuse.
More violence and abuse results in increased societal unrest.

Of how much of this information were you aware?

- ○ All
- ○ A lot
- ○ A moderate amount
- ○ A little
- ○ None

End of Block: STR 3

Start of Block: STR 2

Closing stores will lead to more bankruptcy of companies.
Bankruptcy of companies will lead to less employment.

Less employment reduces the disposable income of citizens.
Less disposable income leads to less expenses.
Less expenses leads to more bankruptcy and less employment.

Of how much of this information were you aware?

- ○ All
- ○ A lot
- ○ A moderate amount
- ○ A little
- ○ None

End of Block: STR 2

Start of Block: STR 1

An increase of infections will lead to more fear among citizens.
Due to this, they will have less contact with others.
Less contact will reduce the mental health of the citizens.
Reduced mental health may lead to more use of drugs.
More use of drugs will give more nuisance of youth.

Of how much of this information were you aware?

- ○ All
- ○ A lot
- ○ A moderate amount
- ○ A little
- ○ None

End of Block: STR 1

Start of Block: Evaluation of measures and difficulty

How effective do you think each of the following measures are during the COVID-19 pandemic? Please assess the measures from the perspective you were given before.

	Extremely effective	Very effective	Slightly effective	Neutral	Slightly ineffective	Very ineffective	Extremely ineffective
Closing stores	○	○	○	○	○	○	○
Increase police capacity to enforce compliance to the measures	○	○	○	○	○	○	○
Keeping distance	○	○	○	○	○	○	○
Imposing a curfew	○	○	○	○	○	○	○
Local, small scale events for youths	○	○	○	○	○	○	○
Subsidizing companies	○	○	○	○	○	○	○
Wearing face masks	○	○	○	○	○	○	○
Crisis communication to increase compliance	○	○	○	○	○	○	○
Creative event organisation	○	○	○	○	○	○	○

This part evaluates your experience with assessing the measures for their effectiveness. Please indicate how much you agree with the following statements.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
0	1	2	3	4

It was complex to rate the measures.	
It took me a long time to decide.	
It took a lot of effort to assess the measures.	

End of Block: Evaluation of measures and difficulty

Start of Block: Information

Thank you for your participation in this study!
Please read the following information carefully!

For this study it was important that some information about the study would be withheld from you. Now that your participation is complete, you will be provided with a description of which information was withheld and why. Afterwards, you will be given the opportunity to decide whether you would like to have your data included in this study or removed from it.

What You Should Known About This Study:
Before you started participating in this study, you were told that the purpose of the study was to assess the relationship between information evaluation and assessment of measures. This is partly correct. The actual purpose of the study was to assess the effect of perspective and information structure on the evaluation of the different measures. More clearly, the purpose was to assess whether structured information with causal relationships was more easy to assess than unstructured information in the form of statements in random order. It was important that your responses were not influenced by knowing that the focus of the study was on the structure of information.

Your Right to Withdraw Data
Now that you know the complete purpose of the study, you may decide whether you want to have your data removed from the study or not. There will be no penalties or negative consequences for you if you withdraw from the study. Even if you withdraw from the study, you are still entitled to the SONA credits.

- ○ My data should be included.
- ○ I want my data to be removed.

End of Block: Information