

# 1 For the Greater Good?

## 2 The Devastating Ripple Effects of the Covid-19 Crisis

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### 11 **Abstract**

12 As the crisis around Covid-19 evolves, it becomes clear that there are numerous negative side-  
13 effects of the lockdown strategies implemented by many countries. At the same time, more  
14 evidence becomes available that the lockdowns may have more negative effects than positive  
15 effects. For instance, many measures taken in a lockdown aimed at protecting human life may  
16 compromise the immune system, especially of vulnerable groups. This leads to the paradoxical  
17 situation of compromising the immune system of many people, including the ones we aim to  
18 protect. Other side effects include financial insecurity of billions of people, excess mortality, and  
19 increased inequalities. As the virus outbreak and media coverage spread fear and anxiety,  
20 superstition, cognitive dissonance reduction and conspiracy theories are ways to find meaning

21 and reduce anxiety. This may play a role in the continuance of lockdown behaviors even as it  
22 becomes clear that this strategy in some ways seems to do more harm than good. Based on  
23 theories regarding social influence, superstition and stress and coping, we seek to explain the  
24 social and behavioral science behind the human behavior in times of crises. We present a model  
25 of drivers and outcomes of lockdown behaviors and offer suggestions to counteract the negative  
26 psychological effects by means of online life crafting therapeutic writing interventions.

## 27 **1. Introduction**

28 **‘A sad soul can kill you quicker than a germ’**

29 **-- John Steinbeck in his novel *Travels with Charley. In search of America (1962)***

30

31 Humans are innately social, and are obviously willing to go to great lengths to preserve the  
32 species, even at the expense of individuals and oneself<sup>1-3</sup>. In extreme cases, people are willing to  
33 sacrifice their own happiness, wealth and even their lives for a good cause<sup>4,5</sup>, and there is some  
34 evidence that especially empathy-induced altruism can be functional<sup>2, cf. 6</sup>. As a massive public  
35 health campaign was launched aimed at slowing the spread of the virus, scholars have outlined  
36 social and behavioral scientific findings that help shape policies that aim to influence human  
37 behavior such as social (physical) distancing<sup>7</sup>. While altruistic acts can be functional in  
38 preserving the human species, under specific circumstances they may become dysfunctional,  
39 especially when the decision is made based on flawed and biased information processing<sup>cf. 8, 9</sup>.  
40 For instance, stereotyping and dehumanization of outgroup members, can be functional for group  
41 conformity and survival, by creating the concept of a common enemy. This may lead to harmful  
42 and immoral outcomes, and pave the way for intergroup conflict and war as groups become

43 distrustful, and prone to stereotyping<sup>10</sup>. In the current times, where the crisis has been labeled as  
44 a ‘war’ on an invisible enemy, many of these dysfunctional sides of otherwise functional  
45 mechanisms become visible<sup>cf. 11, 12</sup>. For instance, people may start blaming Chinese people for  
46 the disease<sup>13, 14</sup>, and on a global level, countries have started to blame each other and China for  
47 the disease. At the same time, pressure on the medical system is high and in response many  
48 countries turn their attention to a possible cure (vaccine) or try to alleviate the pressure on the  
49 healthcare system<sup>e.g., 15</sup>. However, this myopic attendance to Covid-19/SARS-CoV-2<sup>[11]</sup> and  
50 disease control, has led to many consequences that affect people’s (mental) health and safety<sup>16</sup>.  
51 According to Srivatsa and Stewart<sup>17</sup>: “Epidemic response strategies typically involve infection  
52 control, health systems strengthening, and other disease containment strategies. However, intense  
53 focus on pathogen transmission can lead responders to overlook trauma and psychosocial  
54 damage to individuals and communities during and following an epidemic.” Indeed, Brooks et  
55 al.<sup>11</sup> showed that in previous, more localized lockdowns for related viruses the psychological  
56 damage was quite severe, and they conclude that “the potential benefits of mandatory mass  
57 quarantine need to be weighed carefully against the possible psychological costs.”<sup>11; p. 912</sup>. As  
58 many countries are in a lockdown, it becomes clear that this has negative side effects for the  
59 general population, in terms of mental and physical health, as well as on the economic side.

60 In the current review, we aim to elucidate mechanisms that explain the attitudes and behaviors of  
61 people as well behavioral mechanisms in the current situation. We aim to elucidate the processes  
62 through which the decisions for the lockdowns in many countries are internalized and upheld  
63 through a process of framing, social influence and superstition. We will focus on the effects on

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<sup>1</sup> The virus at the center of this crisis is called SARS-CoV-2, while the disease caused by this virus is COVID-19. As many authors have started using the term ‘COVID-19 crisis’, we will use it throughout this paper to refer to the crisis for the sake of simplicity, and readability.

64 the general population, rather than the effects on individual patients and caregivers, which we  
65 deem to be a special group but that has been given attention elsewhere<sup>18, 19, 20</sup>. We will describe  
66 how the framing of the situation by political leaders and in the popular press influences stress  
67 and anxiety, and in turn drives cognition and behavior (i.e. cognitive dissonance, conformity and  
68 obedience). This in turn relates to a weakened immune system, social isolation and related  
69 mental health issues, which affects outcomes such as excess mortality, suicide rates, and an  
70 increase in non-Covid related diseases<sup>cf. 21, 22</sup>. Since these effects are stronger for vulnerable  
71 groups, this will widen the existing inequalities<sup>16</sup>. We will give attention to this paradox, that we  
72 are compromising the immune system of all people in the lockdown situation. The effects will be  
73 moderated by the effectiveness of the coping styles used by individuals (see Figure 1). Due to  
74 space constraints, we will give a brief summary of each topic, and also briefly describe how they  
75 are related and influence each other. We do by no means try to be exhaustive, but have limited  
76 ourselves to the main drivers of human behaviors, and the expected consequences. The model  
77 may act as recommendation for future research, as most of the model, although based on prior  
78 research, has not been tested yet. Since others have suggested policy considerations in order to  
79 help decision-makers prevent the most horrifying scenario such as a scenario of excess mortality  
80 from extreme hunger and famine<sup>e.g., 8, 23, 24</sup>, we will not repeat that here. We will end with  
81 recommendations for interventions that may be used to mitigate the negative effects of the  
82 lockdown on the general population.

## 83 **2. Negative side effects**

84 As half of the world is in some kind of lockdown, this is arguably the largest psychological  
85 experiment ever<sup>25</sup>, with ripple effects on every aspect of human life<sup>7, 26</sup>. As the virus spreads,

86 and the government and media stipulates this, so does the spread of fear. Hence, the lockdown in  
87 many countries can have quite severe side effects on the physical and mental health of  
88 people <sup>11</sup> (for reviews see <sup>21, 27, 28</sup>.) Vulnerable groups, such as people with prior mental health  
89 issues might be at especially high risk <sup>28</sup>. Indeed, a survey by Young Minds revealed that up to  
90 80% of young people with a history of mental health issues reported a worsening of their  
91 condition as a result of the pandemic and lockdown measures <sup>29</sup>. In many countries emergency  
92 admissions, e.g. for cardiac chest pain and transient ischemic attacks, are decreased by about  
93 50%, as people are avoiding hospital visits, which eventually will lead to higher death rates from  
94 other causes, such as heart attack and strokes <sup>29</sup>. Also, the number of people that receive regular  
95 care from physiotherapists, or otherwise, do not receive it. In the lockdown situation, mental  
96 health care is limited or not available at all, and the psychological effects can be devastating.  
97 Also, the fact that the lockdowns have a lot of side-effects gets relatively little attention <sup>16</sup>,  
98 although some have recommended on when to release the lockdown <sup>30</sup>. Many people are likely to  
99 develop a wide range of mental health issues due to being quarantined, such as low mood,  
100 insomnia, irritability, depression and posttraumatic stress disorder <sup>16, 25</sup>. Not only is there fear and  
101 anxiety for oneself or loved ones becoming infected, there is also fear of financial hardship and  
102 uncertainty about what the future may bring. It is expected that there will be an enormous  
103 increase in hunger and poverty, in part due to enormous distortions in many supply chains  
104 around the world <sup>31, 32</sup>. This will be especially so in developing countries with prior challenges of  
105 socio-economic and livelihood issues <sup>33</sup>, which will more directly be related to excess  
106 mortality <sup>34</sup>, and it has been estimated that the negative side-effects of the lock-down may take  
107 up to 100 million lives <sup>24</sup>.

### 108 **3. Framing and behavior**

109 While the effects of the lockdown measures will be hard to reverse or mitigate, the effects on  
110 stress and anxiety as well on people's behavior is influenced by the way the situation is framed.  
111 The way the crisis is framed may be key to how people's behavior is shaped under lockdown  
112 conditions <sup>7</sup>. In general, people have a stronger tendency to act when a problem is framed as  
113 death-preventing (losses) than life-saving (gain) <sup>7, 8, 35</sup>. The groundwork for these kind of framing  
114 effects was laid by prospect theory, which suggests that the pain of losing is about twice as  
115 strong as gaining the same amount, and people are more motivated to avoid losses than to  
116 achieve gains. For instance, when a call for blood donations was described as death-preventing  
117 (losses), rather than life-saving (gains), and as being urgent, this boosted donations <sup>35</sup>. In goal  
118 framing, that focuses on the consequences of a given behavior, especially if a message is framed  
119 as having positive consequences, or avoiding negative consequences, the latter will have a  
120 stronger impact on human behavior <sup>36</sup>. In the current situation, the focus is on death-preventing  
121 from infection with the Corona virus, which can explain the sheer one-sided focus and news  
122 coverage on this perspective. Prior research has focused on the persuasive effectiveness of  
123 messages, especially for promoting health behaviors <sup>37, 38</sup>, and willingness to sacrifice for the  
124 greater good <sup>39</sup>. Also, research on social dilemmas (i.e. a conflict between immediate self-interest  
125 and longer-term collective interests), shows that under certain conditions people are more  
126 inclined to forego their own interests in the interest of the collective longer-term goal of survival.  
127 This research gives insight into the ways in which cooperation occurs (for a review see <sup>40</sup>). As  
128 the situation is also presented as a social dilemma, or an either/or situation, this makes things  
129 complicated. The framing of the disease as a threat to humans, has made sure that most people  
130 adhere to the recommendations <sup>7</sup>, while on the other hand many countries have opted to regulate

131 behavior by rules, regulations and enforcement. The way behavior is maintained is by social  
132 influence, forces that are often indirect, subtle and unconscious <sup>41</sup>.

#### 133 **4. Social influence and behavior**

134 As the covid-19 crisis had been framed as a “war against an invisible enemy” and the nurses and  
135 physicians are named ‘soldiers’ or ‘warriors’ in ‘the front line’ many biases and errors that  
136 humans tend to have, have become visible. Especially the extent to which people obey  
137 authorities, even if the orders given are against their better (moral) judgment has been under  
138 investigation in the last decades. Three famous experiments were conducted, which have become  
139 known as the Asch conformity experiment, the Milgram obedience experiment, and the Stanford  
140 Prison experiment. In the Asch experiment, it was shown that even in a very unambiguous  
141 situation, with one clear right answer, 75% of people could be persuaded to give the wrong  
142 answer as long as the “stooges”, hired by the experimenter, also gave one clear but false  
143 answer <sup>42</sup>. In this experiment people had to judge which line was the same length as three  
144 comparison lines. In the context of the covid-19 crisis, individuals with doubts about the  
145 lockdown may be less likely to voice them when faced with a social circle who outwardly  
146 supports the measures. The public narrative in support of the lockdown may make people  
147 reluctant to raise differing opinions, rather choosing to conform with society as a whole, and  
148 their own social circles <sup>cf. 43</sup>. In the Milgram obedience experiment, it was shown that people  
149 were prepared to potentially harm another person by giving an electric shock to a “learner”. This  
150 experiment showed that ordinary people could be persuaded to harm other people, if an authority  
151 figure asked this, in this case, giving gradually higher shocks, that gradually went up the more  
152 “wrong” answers a student gave <sup>44</sup>. Two-thirds of the participants continued to the highest level  
153 of volts, which were potentially deadly. These experiments showed the majority of ordinary

154 people are prepared to follow orders given by an authority figure, even if it involved killing  
155 innocent human beings. The Stanford Prison experiments sought to find out if ordinary students  
156 were randomly assigned to play guard or prisoner as social roles, and concluded that people are  
157 willing to do so, especially in stereotyped roles. These experiments have been repeated many  
158 times and influence research even today <sup>45</sup>, even though the Stanford Prison experiment had  
159 some fatal flaws in design and carrying out of the experiment <sup>46</sup>. In general, the studies show that  
160 conformity and obedience are very common, and people have an innate tendency to follow the  
161 group and/or a leader <sup>41</sup>. Although in many instances conformity and obedience are functional, in  
162 these experiments and in some instances in real life, conformity and obedience can become  
163 dysfunctional and even harmful. A review of Cialdini and Goldstein <sup>41; p. 61</sup> argued that people are  
164 in general “motivated to form accurate perceptions of reality and react accordingly, to develop  
165 and preserve meaningful social relationships, and to maintain a favorable self-concept.” In  
166 general, compared to conformity, obedience seems to induce greater cognitive conflict <sup>47</sup>. Social  
167 influence theory postulates that attitudes, beliefs and action are influenced through the processes  
168 of compliance, identification and internalization <sup>48</sup>. This concerns not only behaviors that are  
169 asked from the general public by the government, such as social distancing, but also for instance  
170 cases where family members are denied access to a dying parent in a care home. While theories  
171 of social influence explain how and why behavior to adhere to lockdown measures can be  
172 initiated and maintained, in the long run, this needs to be internalized, as people have a need for  
173 (1) consistency between cognition and behavior, and (2) have a need to see a relation between  
174 behavior and outcomes, even if this relation is not there.

## 175 **5. Cognitive dissonance, conspiracy theories and superstition**

176 Cognitive dissonance and superstitious beliefs can explain why people will persist in these  
177 behaviors, even when it becomes known that (in part) these are not helpful. Many people  
178 maintain behaviors, even after some lockdown measures have been lifted and for instance call in  
179 sick for work out of fear to become infected. Moreover, many people will think that the more  
180 sacrifices they make, the more helpful it must be <sup>cf. 49</sup>. Cognitive dissonance will create tension  
181 between the belief that the sacrifices people make are necessary and the belief that some of these  
182 behaviours may be causing more harm than good in terms of mental health <sup>50</sup>. The “unpleasant  
183 tension someone experiences with conflicting beliefs” then leads people to decide that the  
184 lockdown is entirely useful, and people also try to get doubters to reconsider their position, even  
185 in the face of clear evidence of overwhelming negative side effects. Ironically, the term  
186 "cognitive dissonance" is based on research into a religious sect that believed the world would  
187 end. They sold all their belongings and waited for a flying saucer to come and pick them up.  
188 When that subsequently (of course) didn't happen, that was no reason to change their beliefs.  
189 They now stated that they had saved the world and that God had decided to spare it due to their  
190 actions. In this way, they did not have to adjust their core beliefs, instead changing their view of  
191 the facts to fit into their existing narrative <sup>51</sup>. This may also happen, as people believe there is a  
192 strong relation between performing behaviours recommended (e.g. social and physical  
193 distancing, and forced isolation) and they see that it works, as the spread of the disease seem to  
194 be contained, while others have pointed out that the disease may play itself out after a certain  
195 period of time, independent of the measures taken <sup>52, 53</sup>. It may even start to show elements of  
196 superstitious behaviour, where the relation between the behaviour and outcome is spurious, or  
197 not as strong as one beliefs <sup>54</sup>. Also, people seek for an explanation, and they feel the need to  
198 explain large events with proportionally large causes <sup>55</sup>, and as they note that the side-effects of

199 the response to Covid-19 are quite severe, many resort to conspiracy theories<sup>7, 56</sup>. Unfortunately,  
200 although it may be related to decreased anxiety, conspiracy theories are in general more  
201 appealing than satisfying<sup>57</sup>. Prior work has found that a lack of control increases conspiracy  
202 thoughts and superstitious beliefs<sup>58</sup>.

203 Superstition is widespread in most human societies, even today<sup>59, 60</sup>. Especially in times of  
204 uncertainty, there is a need for humans to rely on superstitious behaviors and/or beliefs<sup>54</sup>. These  
205 beliefs are held by many people, also people we regard as intelligent (for a review, see<sup>61</sup>). Prior  
206 research has shown that superstitious beliefs and behaviors can reduce uncertainty-induced  
207 anxiety<sup>54, 61</sup>. In the case of today's uncertainty, where the stakes are high, and mortality salience  
208 is excessively heightened by the constant media coverage of the number of deaths as a result of  
209 Covid-19, as well as uncertainty about just how contagious and deadly the virus is, governments  
210 and individuals alike will resort to superstitious beliefs and behaviors in order to reduce anxiety.  
211 Although most definitions have some element of the belief in magic as part of the definition,  
212 early research suggests that merely seeing a connection between an action and an outcome that is  
213 not really there is also a form of superstition<sup>62</sup>. Acting on it, this performing rituals as ways to  
214 reduce anxiety, is referred to as superstitious rituals<sup>54, 61</sup>. Although this is a form of bias, recent  
215 research suggests that oftentimes, even though people recognize it as a form of superstition, they  
216 choose to hold on to it "just in case". This suggests that people detect the error, admit that this is  
217 a form of superstition, but choose not to correct it. This process has been referred to as  
218 acquiescence<sup>61</sup>. The behaviors asked from people are in part superstitious, and may have an  
219 adaptive function<sup>63</sup>, but also have relations with obsessive-compulsive behavior (OCD). As not  
220 all behaviors are necessary (e.g., staying indoors)<sup>64</sup>, some of these are more OCD like and  
221 superstitious OCD<sup>65, 66</sup>. Although people have various behaviors to counteract stress and

222 possibly exert control over situations <sup>66</sup>, many people still experience mounting stress, not only  
223 by the threat of the virus, but also by the way the situation is framed, as well as the effect of the  
224 lockdown itself. This type of framing helps in sustaining the behavior, sometimes even when  
225 disconfirming information is presented <sup>67</sup>. Even so, and even though people are confronted with  
226 conflicting information, this adds to the stress and anxiety they are seeking to reduce. At the  
227 same time, many people feel that there are too many uncertainties in current situation to be able  
228 to conclude what is the ‘right’ way of acting, even though it becomes clear that the ripple effects  
229 of the current action are quite severe in the long run and it has been estimated that 100 million  
230 casualties may result from the current actions <sup>24</sup>. Nevertheless, in the short run, stress and anxiety  
231 are high and people are motivated to reduce these emotions, via a variety of behaviors and  
232 coping mechanisms (See Figure 1). Nevertheless, many people have a high level of stress and  
233 anxiety, and in turn a compromised immune system. This will be described below.

234 **5 Paradoxical effects of the lockdown: Framing and lockdown measures impact the**  
235 **immune system and this relates to negative health outcomes and excess mortality**

236 Stress is facing challenging or difficult situations (stressors) resulting in physiological and  
237 psychological responses (stress responses). One of bodily systems reacting to these stressors is  
238 our immune system. In acute stress the body reacts to stress with the increase of pro-  
239 inflammatory cytokines. The body is prepared to fight or to flight the stressor(s). Acute stress in  
240 a healthy human is quite harmless, but stress that last for days, weeks, months or years can be  
241 harmful <sup>68</sup>. It can result in a state of chronic systemic inflammation which in turn results in the  
242 development of chronic diseases. For example, it is well known that chronic stress increase  
243 susceptibility to some types of cancer by suppressing Type 1 cytokines and protective T-cells.  
244 Chronic stress exacerbate all kind of pathological immune responses, resulting is diseases and

245 premature death<sup>69</sup>. Especially people with prior childhood trauma may be at risk<sup>68</sup>. As people  
246 age, they face a significant lower ability to face stressors with an appropriate immune response.  
247 This includes physical stress, but also psychological stress<sup>70,71</sup>. Thus, while the current  
248 situation, way of framing and lockdown measures create stress due to a variety of causes (see  
249 Figure 1), and may compromise the immune system of both healthy younger people, as well the  
250 people that we aim to protect with the public health campaign and lockdown measures. So while  
251 a lockdown on a small scale may make sense (a small number of people in quarantine, their  
252 health and immune system gets compromised) are we now doing this for both the people we aim  
253 to protect as well as the people that are expected to have relatively mild symptoms once infected  
254 (healthy young people). Paradoxically then, the measures aimed at protecting the vulnerable,  
255 compromise the immune systems of both healthy young people, as well as vulnerable people  
256 (e.g., older people with one or more underlying diseases). When we focus on the impact of  
257 quarantine of elderly people in nursing homes and retirement homes, which is without doubt an  
258 acute and chronic stressor, several effects can be determined. First it is notable that, as especially  
259 elderly people seems to be, resulting from an aged and dysfunctional immune system, highly  
260 vulnerable to the infection with the new corona virus and subsequently develop a fatal COVID-  
261 19. Many countries, among which the Netherlands, have for this reason chosen to put many  
262 vulnerable elderly people in complete social and physical isolation from their relatives and from  
263 society, in the hope to protect them from infection and so saving their lives and preventing death.  
264 But this forced social and physical isolation is a serious stressor with well-known detrimental  
265 effects on the physical and psychological health<sup>11,25</sup>. Chronic stress in advanced age will  
266 accelerates aging and dysfunction of the immune system. Chronic stress shortens our telomeres  
267 and the shortening of telomeres is linked with all kind of diseases and death<sup>72</sup>. This is a normal

268 evolutionary process, but it is accelerated by stress. Logically, social relationships are closely  
269 linked to the risk of developing illness and mortality. It is found that the influence of the social  
270 relationships on these factors is comparable with well-established risk factors as smoking and  
271 arterial hypertension <sup>72</sup>. They found that cumulative empirical evidence across 148 independent  
272 studies indicates individual social relationships significantly predict mortality with an overall  
273 effect that corresponds with a 50% increase in odds of survival. This is also found by other  
274 researchers <sup>73, 74, 75</sup>.

275 The duration of the social and physical isolation is of importance. During the SARS outbreak  
276 people that were isolated for more than ten days showed significantly higher post-traumatic  
277 stress syndrome than those who were isolated less than ten days <sup>76</sup>. In many countries under  
278 present corona lockdown elderly people are isolated for more than one and a half months. Living  
279 isolated from loved ones result in loneliness, which is a subjective emotional state. Social and  
280 physical isolation is commonly associated with loneliness. This is especially the case in forced  
281 isolation in old age (for a meta-analysis see <sup>77</sup>) where loneliness is strongly associated with  
282 increased mortality. In contrast, a study by Cohen et al. <sup>78</sup> concluded that having more diverse  
283 social networks is associated with a greater resistance to upper respiratory illness.

284 Forced social and physical isolation and preventive quarantine of aged people represent acute  
285 and chronic stressors and have, without any doubt, detrimental negative effects on the aged  
286 immune system, the quality of life and physical and psychological health of elderly people and  
287 increases mortality. This social and physical isolation and quarantine of vulnerable elderly  
288 people is part of the measures governments taken to prevent spreading the corona virus and  
289 death due to COVID-19. The boards of the nursing homes all followed in obedience this but also

290 have to face premature death of elderly unrelated to COVID-19, but to the effects of the forced  
291 isolation.

292 So depriving people from their liberty and normal psycho-social interactions in the need to  
293 prevent infection and death and for the good of the society is contentious. Paradoxically, instead  
294 of preventing disease and death it can also induce disease and death. Some of the negative side  
295 effects can be moderated by the coping styles people use <sup>79</sup>.

## 296 **6 Functional coping styles can alleviate some of the negative side effects**

297 Although the Covid-19 outbreak has caused a tremendous amount of stress on all those involved,  
298 prior research has identified stable psychological traits, and several circumstances that predict  
299 perceived stress under these circumstances <sup>80</sup>. The negative effects of the stress related outcomes  
300 could be (in part) counteracted by functional coping styles, such as a healthy lifestyle, social  
301 support seeking and relaxing exercises <sup>81</sup>. Functional coping styles and several interventions  
302 have been related to better resilience, emotion regulation and health outcomes <sup>82-84</sup>. Many of the  
303 coping strategies are based on “positive psychology and the salutogenesis framework – an  
304 approach focusing on factors that support human health and well-being, instead of factors that  
305 cause disease.” <sup>85; p. 1</sup>. These strategies can diminish the effects and over time (in part) counteract  
306 the negative consequences of the lockdown. Strategies such as cognitive dissonance reduction,  
307 superstitious beliefs and rituals, as well explanation seeking through conspiracy theories,  
308 although somewhat functional in terms of reducing anxiety, are not satisfying key psychological  
309 needs in the long run <sup>cf. 57</sup>. Dysfunctional coping strategies, such as withdrawal/ruminating,  
310 substance use, taking tranquilizers and excessive gaming can exacerbate the negative effects of  
311 the lockdown measures <sup>cf. 86</sup>, and it seems that another paradox is created by the fact that the

312 people experiencing a higher level of psychological distress, also had more dysfunctional coping  
313 styles<sup>86</sup>. In going forward, it is important to try to make sure that this group of people adopts  
314 more functional coping styles<sup>81, 87</sup>.

## 315 **7 Discussion**

316 Our review focused on the psychological and behavioral consequences of the lockdown and  
317 suggested that the negative effects are serious and maybe even outweigh the possible positive  
318 effects of the lockdown for the population as a whole. As Brooks et al. noted<sup>11; p. 919</sup>: “...there  
319 can be long-term consequences that affect not just the people quarantined but also the health-  
320 care system that administered the quarantine and the politicians and public health officials who  
321 mandated it.” Indeed, the measures create a paradoxical situation, where not only people getting  
322 ill are negatively affected, but also the healthy people in the lockdown situation<sup>87, 88</sup>. This  
323 paradoxical situation, could be addressed by (1) evidence-based optimized decision making (2)  
324 stating clear goals for what we are trying to achieve with the measures and (3) an evidence-based  
325 way of public health measures that avoid the negative side effects. As several studies have  
326 suggested ways forward from here in terms of the economic impact<sup>24, 32</sup>, we will focus on  
327 mitigating the (mental) health aspect of the crisis.

328 In order to make sure that some of the negative mental health effects are counteracted, this calls  
329 for effective interventions<sup>89, 90</sup>, that can be made available online and are scalable<sup>85, 91</sup>. Although  
330 tele-health and video consultation can alleviate the immediate problems associated with the lock-  
331 down<sup>22, 92</sup>, there may not be enough staff to effectively treat all people that will need mental  
332 health care in the aftermath of the global lockdown<sup>cf. 21, 90</sup>. Next to giving the public more  
333 information about effective coping styles, an interesting avenue is to make writing interventions

334 available to the wider public, that have proven to have many (mental) health benefits<sup>93,94</sup>, as  
335 well as performance benefits<sup>95</sup>; for reviews see<sup>85,91</sup>. This type of care could even be delivered  
336 by a life crafting chatbot<sup>96</sup>. Life crafting, or the process of reflecting and writing about their  
337 present and ideal future life, and make plans and changes to their lives accordingly, has been  
338 touted as a way to improve both meaning in life and psychological and physical health<sup>85</sup>. This  
339 may be now more needed than ever<sup>90,91</sup>. Digital mental health tools are a way forward in  
340 counteracting the negative mental health effects in the wake of the Covid-19 crisis and investing  
341 in making these available for large groups of people in need is key<sup>90</sup>. We hope that the negative  
342 side effects can be counteracted over time via smart interventions and community care.

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575

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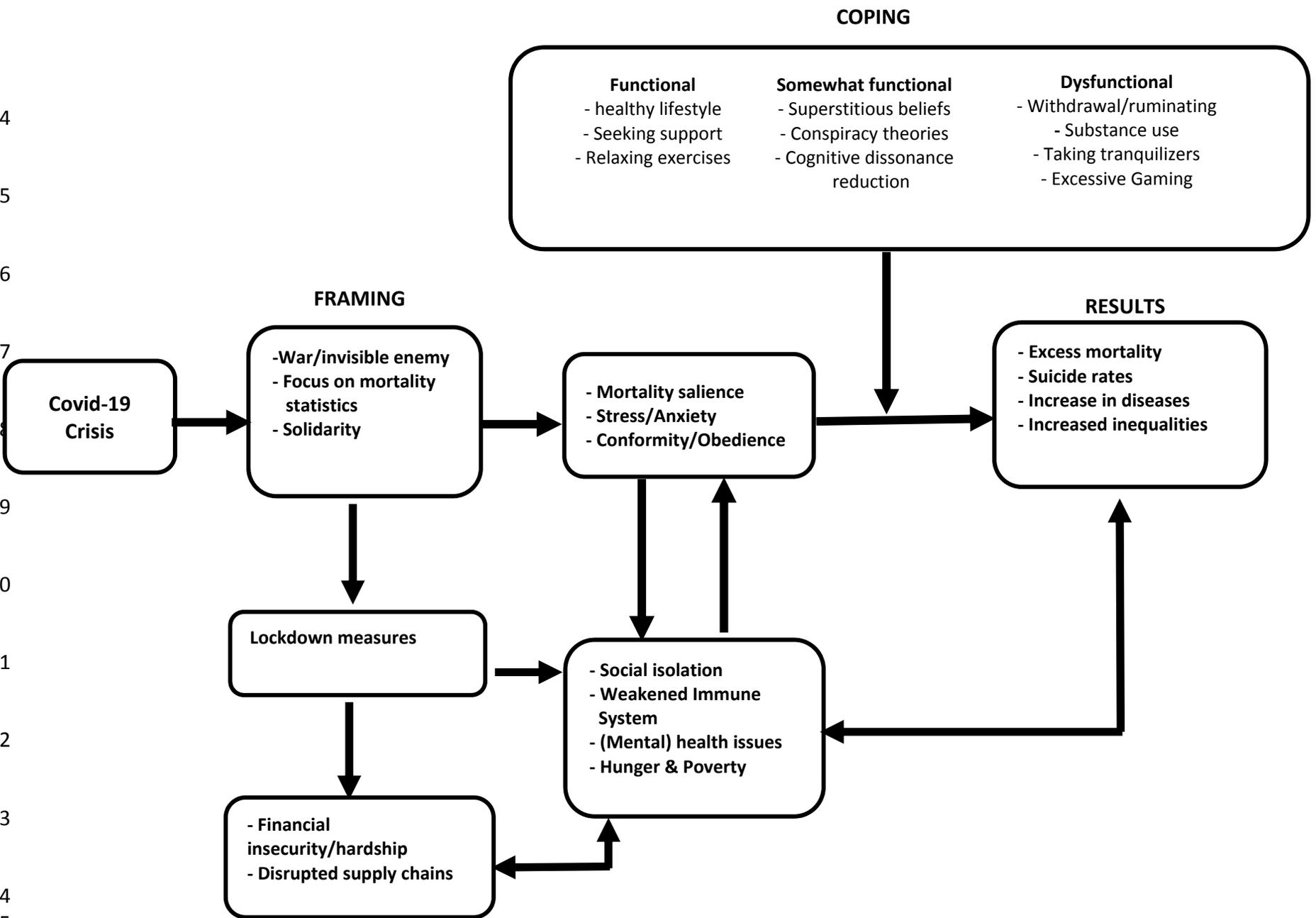


Figure 1: Theoretical model of consequences of the Corona Covid-19 crisis