Supplementary Materials

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# Details of the procedure

The individuals were required first to answer common questions and then to choose among three groups of relative questions: (a) experience with the lockdown, (b) representations and perception of the Covid-19 risk, or (c) experience with remote working. The present study will focus only on participants having chosen group "b."

# Details of the measures

## Risk perception

The following statements were presented to the participants :

* I think I would be able to control the progression of Covid-19, once I get infected by it" (perceived level of control over Covid-19)
* Do you feel it is probable that you could become infected in the coming months? (perceived probability of becoming infected by SARS-CoV-2)
* Compared to other people in the French population – of the same sex, same age and in the same health condition as you – you would assess your risk of becoming infected by the virus as… (comparative probability of becoming infected by SARS-CoV-2)
* I am worried at the idea of becoming infected by Covid-19 (concern about becoming infected by SARS-CoV-2)
* I think that becoming infected by Covid-19 would lead to serious consequences for my health (assessment of the severity of the consequences of Covid-19 on one's health)
* I think that becoming infected by Covid-19 would have long-term consequences for my health (assessment of the duration of Covid-19's health consequences for my health)

For the comparative probability of becoming infected, the participants answered using a 7-point Likert scale ranging from "Much lower" to "Much higher." We used a 7-point Likert scale ranging from "Not at all" to "Absolutely" for the other five items.

## Health

The group of weakening chronic diseases includes people with diabetes, hypertension, heart failure (or angina pectoris or arrhythmia), chronic lung disease, and kidney disease. People ‘only’ suffering from the following diseases were placed in the group of non-weakening chronic diseases: phlebitis (or pulmonary embolism, arteritis), ulcers (or gastric pain), constipation, osteoarthritis (or inflammatory rheumatism), stroke (or Parkinson’s disease or epilepsy), urinary infection, hearing loss, vision impairment (cataract, glaucoma, AMD), thyroid disease, autoimmune disease, and viral infection.

# Latent profile analysis

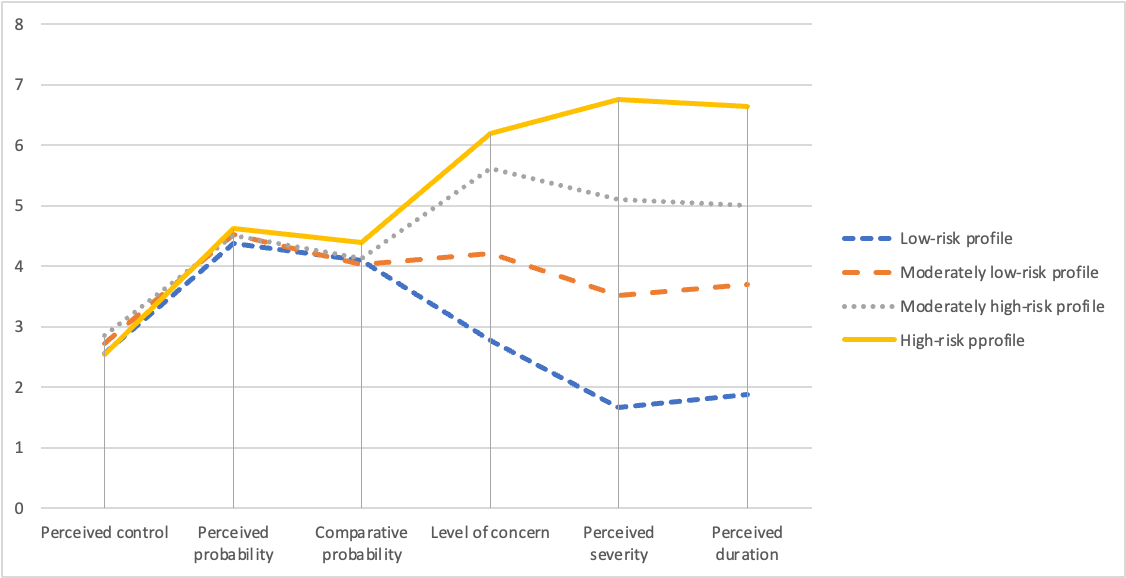
Latent profile analysis (LPA) belongs to the family of "finite mixture models" used to update latent profiles based on a set of variables. Each profile identified is characterized by a specific organization of these variables and a grouping of comparable individuals. This approach differs from regression analyses because it focuses on individuals rather than variables. It can identify groups of people based on their similarities with a set of given variables. The choice of the number of profiles is determined by the combination of statistical indicators and an appreciation of the theoretical relevance of the results. The purpose is to achieve an interpretable parsimonious result [1,2].

The BLRT [3] is used to compare each model to the next with k+1 profiles. A p-value < 0.05 indicates that the model with k+1 profiles is better than the model with k profiles. Thus, thanks to the p-value, the advantage of BLRT is that it can be used to quantify the confidence one can have in the results obtained. However, it may tend to overestimate the number of adequate profiles [4]. The BIC [5] is an indicator based on a model’s log-likelihood. The best model is the one with the lowest BIC value [2]. Its relevance improves as the sample gets larger [6]. This indicator can also lead to overestimating the number of profiles [7]. The AIC is also an indicator based on a model's log-likelihood, but unlike the BIC, the sample size does not come into play for this indicator [2]. This criterion is considered better in the case of a sample of fewer than 500 individuals or for detecting rarer profiles [2,7]. The lowest AIC designates the most adequate model. Lastly, the Entropy score indicates the capacity of each model to separate the different profiles adequately [8]. The closer the score is to 1, the better the model. A score greater than 0.80 is preferable, although a score between 0.60 and 0.80 is acceptable [9,10]. Finaly, the BLRT and the BIC are the best indicators to determine the ideal number of profiles [1].

# Supplementary Table 1. Latent profile characteristics

| **Covid-19 risk perception variables** | **Low-risk profile, n=154** | **Moderately low-risk profile, n=252** | **Moderately high-risk profile, n=140** | **High-risk profile, n=202** | **p-value1** | **Post-hoc test** |
| --- | --- | --- | --- | --- | --- | --- |
| **Perceived control** |  |  |  |  | 0.063 | - |
| *Median* | 2.00 | 3.00 | 3.00 | 2.00 |  |  |
| *Mean ± SD* | 2.56 ± 1.71 | 2.73 ± 1.57 | 2.86 ± 1.81 | 2.54 ± 1.91 |  |  |
| *25%-75%* | 1.00-4.00 | 1.00-4.00 | 1.00-4.00 | 1.00-4.00 |  |  |
| *Minimum-Maximum* | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 |  |  |
| **Perceived probability** |  |  |  |  | 0.69 | - |
| *Median* | 4.00 | 4.50 | 4.50 | 5.00 |  |  |
| *Mean ± SD* | 4.38 ± 1.90 | 4.52 ± 1.40 | 4.51 ± 1.55 | 4.62 ± 1.64 |  |  |
| *25%-75%* | 3.00-6.00 | 4.00-5.00 | 4.00-5.00 | 4.00-6.00 |  |  |
| *Minimum-Maximum* | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 |  |  |
| **Comparative probability** |  |  |  |  | **0.025** | Low-Risk < High-risk**\*** |
| *Median* | 4.00 | 4.00 | 4.00 | 4.00 |  |  |
| *Mean ± SD* | 4.10 ± 1.32 | 4.03 ± 1.02 | 4.12 ± 0.85 | 4.39 ± 1.28 |  |  |
| *25%-75%* | 4.00-4.75 | 4.00-4.00 | 4.00-4.00 | 4.00-5.00 |  |  |
| *Minimum-Maximum* | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 |  |  |
| **Level of concern** |  |  |  |  | **<0.001** | All**\*\*\*** |
| *Median* | 2.00 | 4.00 | 6.00 | 7.00 |  |  |
| *Mean ± SD* | 2.77 ± 1.53 | 4.21 ± 1.51 | 5.61 ± 1.38 | 6.19 ± 1.24 |  |  |
| *25%-75%* | 2.00-4.00 | 3.00-5.00 | 5.00-7.00 | 6.00-7.00 |  |  |
| *Minimum-Maximum* | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 |  |  |
| **Perceived severity** |  |  |  |  | **<0.001** | All**\*\*\*** |
| *Median* | 2.00 | 4.00 | 5.00 | 7.00 |  |  |
| *Mean ± SD* | 1.66 ± 0.54 | 3.52 ± 0.66 | 5.11 ± 0.64 | 6.75 ± 0.43 |  |  |
| *25%-75%* | 1.00-2.00 | 3.00-4.00 | 5.00-5.00 | 7.00-7.00 |  |  |
| *Minimum-Maximum* | 1.00-3.00 | 2.00-6.00 | 4.00-7.00 | 6.00-7.00 |  |  |
| **Perceived duration** |  |  |  |  | **<0.001** | All**\*\*\*** |
| *Median* | 2.00 | 4.00 | 5.00 | 7.00 |  |  |
| *Mean ± SD* | 1.88 ± 0.83 | 3.69 ± 0.90 | 5.01 ± 1.07 | 6.64 ± 0.63 |  |  |
| *25%-75%* | 1.00-2.00 | 3.00-4.00 | 5.00-6.00 | 6.00-7.00 |  |  |
| *Minimum-Maximum* | 1.00-5.00 | 1.00-7.00 | 1.00-7.00 | 4.00-7.00 |  |  |
| 1Kruskal-Wallis rank sum test; *SD: standard deviation; Post-hoc test : Conover's non-parametric all-pairs comparison test; \*p < 0.05; \*\*p < 0.01: \*\*\*p < 0.001* | | | | | |  |

# Supplementary Figure 1. Graphical representation of the four latent profiles of risk perception of Covid-19



**Note for the editor: if published in paper format, this figure must be represented in black and white.**

# SupplementaryTable 2. Univariate tests to select variables for multivariate analysis

| Variables | Low-risk profile, n=154 | Moderately low-risk profile, n=252 | Moderately high-risk profile, n=140 | High-risk pprofile, n=202 | p-value1 |
| --- | --- | --- | --- | --- | --- |
| **Age** |  |  |  |  | **<0.001** |
| *Median* | 40 | 48 | 51 | 56 |  |
| *Mean ± SD* | 41 ± 13 | 48 ± 13 | 50 ± 14 | 54 ± 12 |  |
| *25%-75%* | 31-52 | 37-60 | 41-61 | 45-62 |  |
| *Minimum-Maximum* | 19-69 | 20-76 | 24-75 | 20-82 |  |
| **Perceived SES** |  |  |  |  | **<0.001** |
| *Median* | 7.00 | 7.00 | 7.00 | 6.00 |  |
| *Mean ± SD* | 6.66 ± 1.71 | 6.87 ± 1.40 | 6.50 ± 1.51 | 5.93 ± 1.72 |  |
| *25%-75%* | 6.00-8.00 | 6.00-8.00 | 5.75-7.25 | 5.00-7.00 |  |
| *Minimum-Maximum* | 2.00-10.00 | 2.00-10.00 | 2.00-10.00 | 1.00-10.00 |  |
| **In a relationship, n (%)** |  |  |  |  | **0.004** |
| *No* | 44 (29) | 59 (23) | 19 (14) | 59 (29) |  |
| *Yes* | 110 (71) | 193 (77) | 121 (86) | 143 (71) |  |
| **Cancer, n (%)** |  |  |  |  | **<0.001** |
| *Never had cancer* | 124 (81) | 187 (74) | 84 (60) | 87 (43) |  |
| *Currently undergoing cancer treatment* | 9 (5.8) | 25 (9.9) | 21 (15) | 44 (22) |  |
| *Had cancer* | 21 (14) | 40 (16) | 35 (25) | 71 (35) |  |
| **Other chronic diseases than cancer, n (%)** |  |  |  |  | **<0.001** |
| *No chronic disease* | 139 (90) | 213 (85) | 100 (71) | 114 (56) |  |
| *Chronic weakening disease* | 4 (2.6) | 17 (6.7) | 23 (16) | 51 (25) |  |
| *Other chronic disease* | 11 (7.1) | 22 (8.7) | 17 (12) | 37 (18) |  |
| **Had at least one relative with covid-19, n (%)** |  |  |  |  | **0.041** |
| *No* | 96 (62) | 152 (60) | 91 (65) | 147 (73) |  |
| *Yes* | 58 (38) | 100 (40) | 49 (35) | 55 (27) |  |
| **Gender, n (%)** |  |  |  |  | 0.47 |
| *Woman* | 148 (96) | 237 (94) | 133 (95) | 196 (97) |  |
| *Man* | 6 (3.9) | 15 (6.0) | 7 (5.0) | 6 (3.0) |  |
| **Feeling of being protected by lockdown** |  |  |  |  | **<0.001** |
| *Median* | 6.00 | 6.00 | 6.00 | 6.00 |  |
| *Mean ± SD* | 5.13 ± 1.78 | 5.55 ± 1.45 | 5.67 ± 1.35 | 5.95 ± 1.35 |  |
| *25%-75%* | 4.00-7.00 | 5.00-7.00 | 5.00-7.00 | 5.00-7.00 |  |
| *Minimum-Maximum* | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 | 1.00-7.00 |  |
| **Psychological distress** |  |  |  |  | **<0.001** |
| *Median* | 2.00 | 2.00 | 3.00 | 3.00 |  |
| *Mean ± SD* | 2.83 ± 2.73 | 2.43 ± 2.55 | 3.35 ± 2.92 | 3.39 ± 2.80 |  |
| *25%-75%* | 1.00-4.00 | 0.00-4.00 | 1.00-5.00 | 1.00-5.00 |  |
| *Minimum-Maximum* | 0.00-11.00 | 0.00-12.00 | 0.00-12.00 | 0.00-11.00 |  |
| **Residence area, n (%)** |  |  |  |  | **0.006** |
| *Urban* | 76 (49) | 108 (43) | 51 (36) | 87 (43) |  |
| *Peri-urban* | 52 (34) | 80 (32) | 37 (26) | 52 (26) |  |
| *Rural* | 26 (17) | 64 (25) | 52 (37) | 63 (31) |  |
| 1Kruskal-Wallis rank sum test; Pearson's Chi-squared test | | | | | |

# Association between risk perception profiles and other variables

**Other somatic health factors.** People with chronic diseases other than cancer were more likely than others to belong to the high-risk profile (for weakening disease aOR: 4.64; p<0.001 and for other chronic diseases, aOR: 2.59; p= 0.003).

**Sociodemographic factors.** The older the respondents, the less likely they were to belong to the low risk profile (aOR: 0.96; p<0.001) and the more likely they were to belong to the high-risk profile (aOR: 1.02; p=0.034). The higher the perceived socioeconomic status, the less likely it was to belong to the moderately high- (aOR: 0.84; p=0.024) or high- (aOR: 0.69; p<0.001) risk profile. Being in a relationship was positively associated with a moderately high risk perception profile (aOR: 2.50; p=0.003). Finally, having a relative with covid-19 was negatively associated with high-risk profile (aOR: 0.58, p=0.018).

**Emotional factors and psychological distress.** The more people felt protected by the lockdown, the less likely they were to belong to the low-risk profile (aOR: 0.87; p=0.036), and the more likely they were to belong to the high-risk profile (aOR: 1.31; p<0.001). The more psychologically distressed individuals were, the more likely they were to perceive the risk as moderately high (aOR: 1.17; p<0.001) or high (aOR: 1.19; p<0.001).

# Discussion of secondary findings

In addition to our main objective, multivariate analysis showed that the profiles were also associated with other health, sociodemographic, emotional, and psychological characteristics.

Having a chronic disease was associated with a deep concern about falling ill [11] and higher perceived severity of the Covid-19 risk [12]. Conversely, a French study showed a negative connection between a personal experience with chronic disease and Covid-19 risk perception [13].

The two profiles that perceive the risk as being highest are associated with a lower subjective socioeconomic position. This is in line with a tendency that, while not unanimous, is observed in respiratory diseases [14–17]. Our results also show that the older the individuals, the less likely they belong to the “Low Risk Perceivers” profile and the more likely they belong to the "High Risk Perceivers" profile. Numerous studies show a positive association between age and

perceived severity of Covid-19 [18–22]. Note, however, that a contradictory study found a greater perception of risk among young people [23]. An Italian study shows that age is also associated with low perceived vulnerability (i.e., perceived probability and comparative probability) [18].

Furthermore, living with a partner is associated with a moderately high risk perception. It is probable that sharing an accommodation living under the same house, very often associated with living with a partner, reduces the feeling of risk control, encouraging a greater perception of it, particularly for a risk associated with an infectious disease. This interpretation should, however, be put into perspective. Indeed, living with a partner does not appear to encourage the perception of high risk nor to reduce the probability of belonging to the low risk perception profile.

In contrast to several studies [11,24,25], our study shows a negative association similar to the results reported by Attema & al [13]. These results can be explained by considering the distinctive characteristics of Covid-19 risk. Although it has had a significant impact worldwide, Covid-19 remains a relatively low mortality disease (infection fatality ratio in France was 0.65% [26]). In our sample, only 1.7% of respondents reported knowing someone who had died of Covid-19. Consistent with Attema & al [13], we, therefore, assume that a primarily benign experience-through others-of the disease is what protects against a high level of risk perception.

In addition, high perceived risk was associated with the perception that containment was effective in protecting against the virus (and vice versa). Thus, adherence to containment measures is the corollary of high risk perception: the more important the risk is perceived to be, the more legitimate it is to protect oneself from it (and vice versa).

Finally, the more psychological distress individuals experienced, the more likely they perceived the risk as high or moderately high. A large study of 54,845 people across 112 countries showed that a higher risk perception of COVID-19 was associated with less positive or more negative emotions [27].

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