



COVID-19 protective behavior among French high school students

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Introduction and context

COVID-19 pandemic in France during the first wave of infections

- **lockdown period:** 17th March 2020 to 11th of May 2020
- **Schools :** closed mid-March, 2020, slow reopening after mid-May, 2020
- **Government Communication:** Shift from reassurance to alarm; compared to a war context with the objective of encouraging the population to adopt **protective behavior**
- **Information Spread:** Focus on lockdown measures rather than scientific information (Schück et al. 2021)
- **Issues:** teenagers mental well-being strongly affected and less inclined to **adopt protective behavior** (Pagnini et al., 2020)

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Before July 2020, not necessary

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After July 2020, mandatory in public spaces

Aims of the study

Explores the different predictors of protective behavior of French secondary school students during the first COVID-19 pandemic.

Relationships has been drawn between the perceived knowledge, perceived severity, interest in science and protective behaviour.

Protective Behavior

- **Defined in three “types”** (Jørgensen *et al.* 2021):
- **Preventive behavior:** broadly in the hygiene dimension (e.g., handwashing, wearing masks)
- **Avoidance behavior:** referring to social distancing (e.g., stay at home, avoid crowded places)
- **management behavior:** such as taking medication or monitoring health

Many studies investigated protective behavior as a unique dimension (or failed to identify those three clear independent dimensions)

Interest in Science

- **Reflects** the cognitive potential of a student for achievement in the science field
- **Interest in science** may positively impact behaviors such as science engagement and knowledge (e.g., Bathgate & Schunn, 2016) and even for decision making skills (Sadler & Dawson, 2012)

Perceived Severity

- **Definition:** The negative consequences an individual associates with Covid-19
- **Important predictor** for protective behavior (Anaki & Sergay, 2021)
- **Important predictor** of staying at home (avoidance behaviour; Irigoyen-Camacho et al., 2020)

Perceived Knowledge

- **Definition:** one's self-assessment or feeling of knowing
- **Important predictor** for vaccine intention (preventive behavior) and perception of severity (Faasse & Newby, 2020)

The two main research questions

1 – To what extent 1-factor model of protective behavior fits with our sample of French secondary school students?

2 – What are the interrelations between perceived knowledge, perceived severity, protective behavior, and interest in science, including the impact of some demographic variables?

H1: The severity perception of COVID-19 would be positively predicted by perceived knowledge about COVID-19 (Faasse & Newby, 2020).

H2: Protective behaviors would be positively predicted by perceived knowledge about COVID-19 (Faasse & Newby, 2020).

H3: Protective behaviors would be positively predicted by perceived severity (Anaki & Sergay, 2021)

H4: Perceived knowledge would be positively predicted by interest in science (Bathgate & Schunn, 2016).

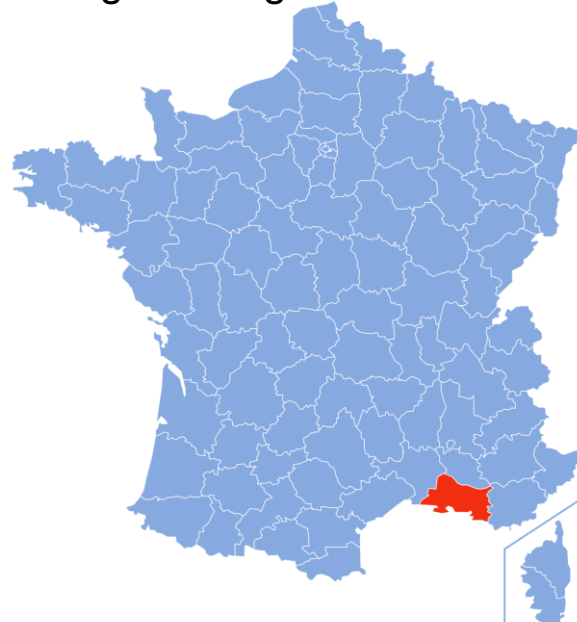
H5 Protective behaviors would be positively predicted by interest in science (Yacoubian, 2018)

H6: Demographic variables, such as age, infection by COVID-19, and knowing people who had and were infected with COVID-19 would predict protective behaviour (Wolfe et al., 2021; Le Vigouroux et al. 2021...)

Methodology

Participants

- Secondary school students (16 to 18 years old students)
- Sphinx software and filled in online during learning sessions between 19/05/2020 and 15/06/2020
- N = 691
- From the region of Marseille



Methodology

Instruments

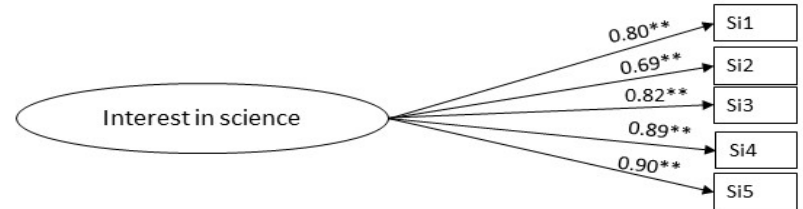
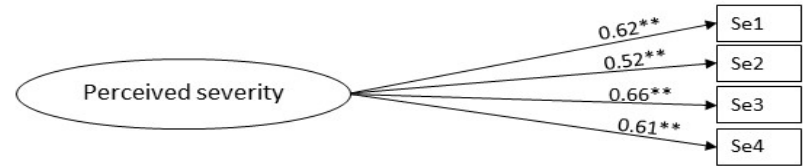
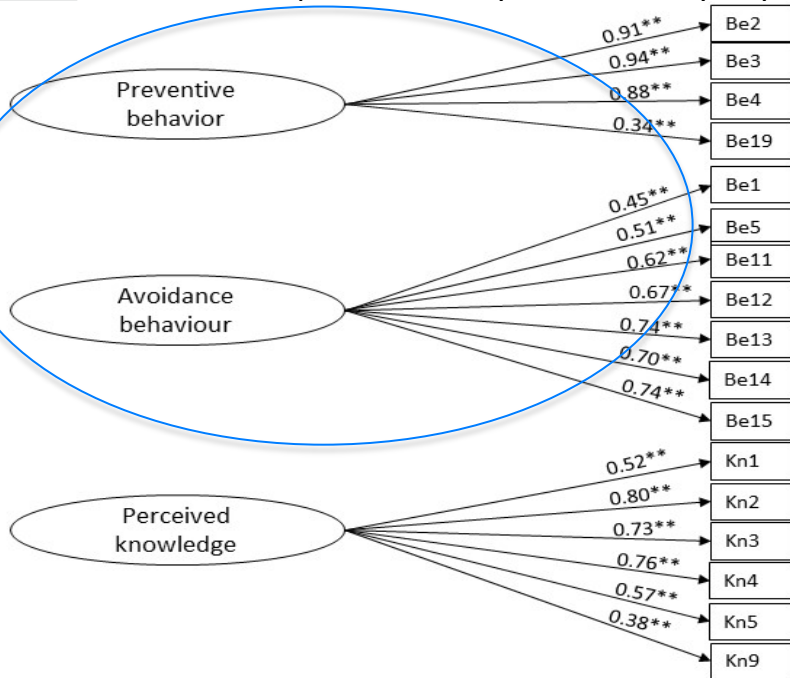
Perceived knowledge, perceived severity, and protective behavior (Yang *et al.* 2020)
Interest in science (PISA, 2015).

Avoidance behavior		Preventive behavior	
Je reste à la maison autant que possible	I stay at home as much as possible	Je porte un masque	I wear a face mask.
Management behavior			
Je surveille de près ma santé	I monitor my health closely		
Perceived severity			
Je pense que les séquelles dues au coronavirus sont importantes.	I think the after-effects of the coronavirus are significant.		
Perceived knowledge		Interest in Science	
Je connais bien les causes de la maladie	I am familiar with the causes of the disease	Je trouve amusant d'apprendre les sciences	I find it fun to learn about science

Examples of items for each dimension

Results

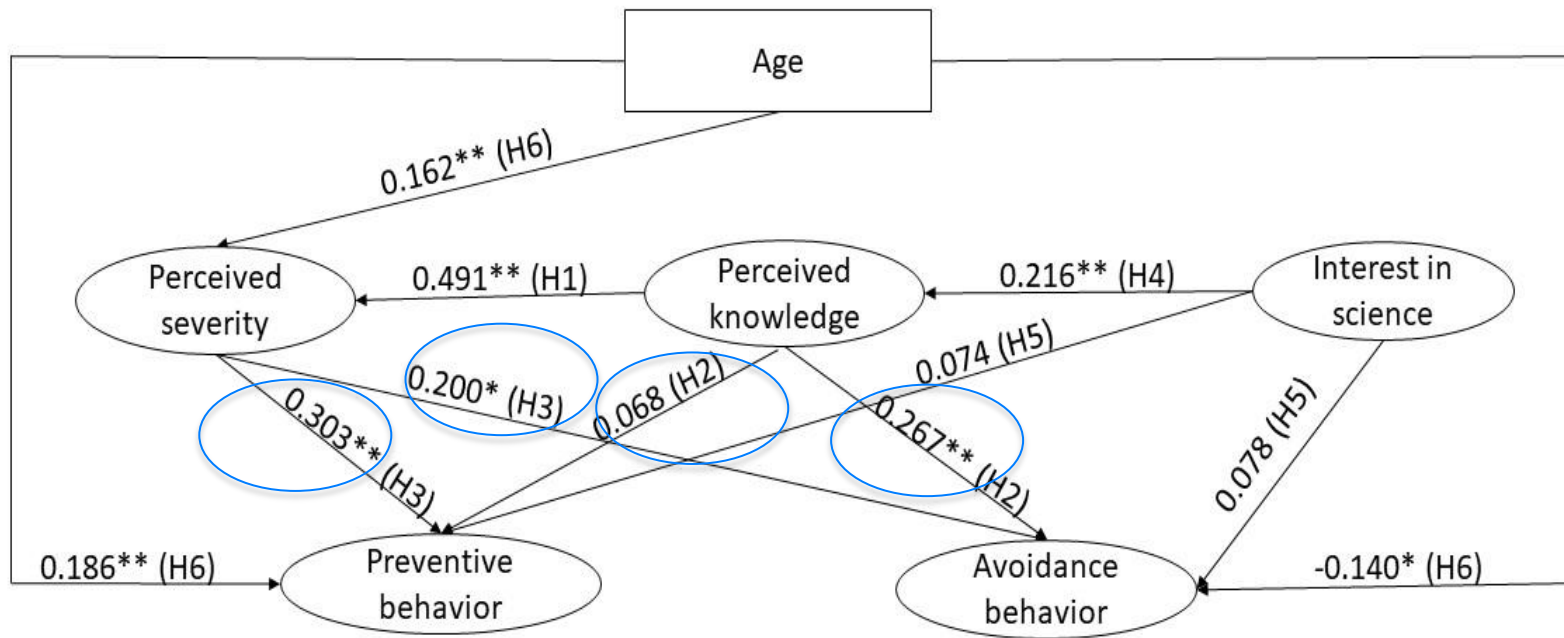
- **EFA** (exploratory factor analysis) was performed to investigate the model structure and dropped the irrelevant items (all the items about management behavior).
- **CFA** (confirmatory factor analysis)



Goodness of fit indices : $\chi^2/df = 2.77$, RMSEA = 0.072, SRMR = 0.018, CFI = 0.992)

Results

SEM (Structural equation modelling)



Validated model with standardized path coefficients (p-value < 0.05*; p-value < 0.01**) Goodness of fit indices $\chi^2/df = 1.789$, RMSEA = 0.048, SRMR = 0.057, CFI = 0.931

Discussion

- **Recommendation for future study analysing student protective behavior:**

Protective behaviors have to be analyzed as at least two independent sub-factors (confirming rare studies considering subfactors e.g., Jørgensen et al., 2021).

- **Perceived knowledge doesn't predict preventive behavior rather than avoidance behavior**

That students perceived as “contradictions” in media/government about preventive behavior probably induced this result (rather than the tentativeness in science).

- **Perceived severity predicts preventive and avoidance behavior:**

Should biology education increase the perceived severity ? “mental well-being strongly affected” (Pagnini *et al.*, 2020)

New opportunity to learn NOS (tentativeness of scientific knowledge, role of error in scientific research, role of debate in the development of science, ethic in Science...García-Carmona, 2021, Reiss 2020).

“Scientific progress as reflected in reports and public debate during the COVID-19 pandemic offers vivid examples of teachable aspects of the nature of science.” (Shi, 2022 : Nature Human Behaviour)

Thank you for your attention

For more information:

Recently published in *Public and One Health*:

Castéra, J., Coupaud, M., Coiffard Marre, C., Jegou, H., Cheneval-Armand, H. and Delserieys-Pedregosa, A., (2024). COVID-19 protective behavior When science interest and knowledge matter. *Journal of Global, Public and One Health*, 2024, (10.61034/JGPOH-2024-9).