Received: 4 June 2021 | Revised: 14 March 2021 | Accepted: 3 November 2021

DOI: 10.1111/tbed.14410

ORIGINAL ARTICLE

Transboundary and Emerging Diseases WILEY

Main determinants of the acceptance of COVID-19 control measures by the population: A first pilot survey at the University of Liege, Belgium

Véronique Renault[1] | Sébastien Fontaine[2] | Serge Eugène Mpouam[3] | Claude Saegerman[1]

[1] Department of Infectious and Parasitic Diseases, Research Unit in Epidemiology and Risk Analysis Applied in Veterinary Sciences (UREAR), Fundamental and Applied Research for Animals and Health (FARAH) Center, University of Liege, Liège, Belgium

[2] Faculty of Social Sciences, Institute for Research in Social Sciences (IRSS), University of Liege, Liège, Belgium

[3] School of Veterinary Medicine and Science, University of Ngaoundere, Ngaoundéré, Cameroon

Correspondence
Claude Saegerman, Department of Infectious and Parasitic Diseases, Research Unit in Epidemiology and Risk Analysis Applied in Veterinary Sciences (UREAR), Fundamental and Applied Research for Animals and Health (FARAH) Center, University of Liege, Liège, Belgium.
Email: claude.saegerman@uliege.be

Abstract

Background: In order to control the COVID-19 pandemic, barrier gestures were used to reduce the transmission of the virus within a community and avoid large peaks of infections with the risk of overwhelming the healthcare systems. The acceptability of these measures is the backbone of their successful implementation. However, population compliance with these measures within a community is uncertain, even when mandatory. At the beginning of the 2020–2021 academic year, the University of Liege complemented these measures, by organizing a weekly screening by saliva testing on a voluntary basis for all its workers and students. Their compliance with the different measures was necessary for effective control program and an intensive communication plan was implemented throughout the 2020–2021 academic year for that purpose

Method and principal findings: An online survey was launched upon the implementation of the saliva testing in order (i) to assess the level of acceptance of the different measures by the university workers and students and (ii) to identify the factors determining their acceptance (based on the Health Belief Model) and their reported level of implementation. A total of 921 responses was received and analysed by sub-group comparison, structural equation modelling and multivariable ordinal logistic regression. Health motivation, susceptibility, severity and perception of benefits were identified as the key determinants of protective measures acceptance

Conclusion and significance: In order to influence positively these mental constructs and to increase the level of implementation of control measures, it is therefore recommended to raise the awareness of the university workers and students about their self and collective responsibility to protect themselves and the population at risk that can be severely affected by the disease. The non-medical faculties (i.e. the Faculty of Medicine and the Faculty of Veterinary Medicine excluded) should be specifically targeted as their heath motivation was significantly lower. This survey demonstrates that the risk mitigation strategies against COVID-19 should integrate the importance of individual perception. The methodology developed in this survey can be generalised in space and time, in different contexts.

KEYWORDS
acceptability, attitudes, control, COVID-19, Health Belief Model, prevention, saliva testing

1 INTRODUCTION

Infection with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) induces coronavirus infectious disease 19 (COVID-19) (Coronaviridae Study Group of the International Committee on Taxonomy of Viruses, 2020). Since the first report on 31 December 2019, COVID-19 has resulted in high morbidity with around 132 million confirmed cases worldwide (World Health Organization, 2021) and 0.99 million in Belgium (as of early May 2021). By the end of April 2021, there were around 24,250 deaths in Belgium with close to 53% of these occurring in nursing home (NH) residents (Sciensano, 2021).

COVID-19 represents the largest pandemic of the century. Since the onset of the pandemic and based on the existing knowledge of other coronaviruses such as the Middle East Respiratory Syndrome coronavirus (MERS-CoV), the control of COVID-19 mainly relies on different barrier gestures aiming at preventing and controlling the transmission of the virus. Three main human to human COVID-19 transmission pathways are described: direct contact, aerosols and droplets (Rahman et al., 2020). Aerosol and droplet transmissions are considered as the predominant pathways. The virus is excreted in the air through coughing and sneezing. It can then be inhaled, ingested or landing on a mucous membrane causing a new infection. The risk of transmission of COVID-19 is therefore particularly important in closed environments where the aerosols may remain suspended in the air at high concentrations for long periods. As the virus can survive up to a few days in the environment (Ali & Alharbi, 2020; van Doremalen et al., 2020), indirect contact transmission can occur in case of contact with virus-contaminated surfaces and infection by the virus through nasal, oral and ocular routes. The World Health Organisation recommended control measures in order to reduce the transmission of the virus within communities and avoid large peaks of infections with the risk of overwhelming the healthcare systems. In addition to vaccination (that was not in place during this study in Belgium), these measures are: (i) the limitation of people movements and contacts by travel bans, confinements or quarantine, (ii) the limitation of gathering (e.g. restricted social bubbles, forbidden indoor sports and competitions), (iii) the regular screening of people and high risk contact-tracing and (iv) different protective measures aiming at reducing the infection by aerosols or droplets such as regular handwashing and surface decontamination, wearing masks or gloves and maintaining physical distancing. Depending on countries, their implementation is either up to people or mandatory. Ensuring mandatory application of these control measures through law enforcement (police and army deployments) at large scale and over a long period is costly (Boterman, 2020; Pfattheicher et al., 2020). Because of that constraint, self-compliance to barrier measures was recommended in several countries. It appears from the observations, the comments read on the social networks and some events reported by the media that, for various reasons, these measures are not always properly implemented (e.g. lockdown parties and non-respect of the quarantine after travelling). The non-respect of these preventive and control measures are at the origin of the outbreak of several clusters and should therefore be addressed. A few psychological studies analysed some of the determining factors regarding the adoption of the measures recommended to control COVID-19 or the acceptance of the social behaviour changes required to effectively address it (Gibson Miller et al., 2020; Moussaoui et al., 2020; Pfattheicher et al., 2020; Wise et al., 2020). In those studies, the determining factors varied according to the model used (e.g. capability, opportunity, motivation-behaviour model of behaviour change) or pre-existing data from consulted studies on beliefs, perceptions and cues to action reported there. However, most factors identified in those studies were similar to the ones of the Health Belief Model (HBM) which was specifically developed to study health-related behaviours (Abraham & Sheeran, 2015). Indeed, the HBM capacity to predict health-related behaviours has been proven by several studies resulting in its recommendation for use in health education program settings (Janz & Becker, 1984). The HBM defines five perceptions or mental constructs which influence the actual intention to implement a given behaviour (Abraham & Sheeran, 2015): risk susceptibility, risk severity, health motivation, benefits of the behaviour(s) and barriers to behaviour implementation. To those five constructs, 'anxiety', a psychological state, was added. A review of the determinants of protective behaviours during the H1N1 pandemic confirmed that these perceptions are important determining factors. The levels of stress and trust in authorities have also been identified as key determinants (Bish & Michie, 2010). In order to better understand and promote the adoption of proper COVID-19 proper risk mitigation behaviours by the population, an urgent need for research in health psychology was therefore highlighted (Arden & Chilcot, 2020; Bish & Michie, 2010).

In September 2020 in Belgium, authorities analysed the COVID-19 context with respect to the beginning of the 2020–2021 academic year and a 'Yellow' code was established in all teaching facilities. This code allowed the traditional face-to face teaching to take place under certain conditions and compliance of barrier gestures such as regular handwashing with hydro-alcoholic gel, keeping physical distancing of 1.5 m, wearing masks inside the buildings and defining people circulation flow. In addition to these measures and to better control the SARS-CoV-2, the University of Liege (ULiege) organised a voluntary large-scale weekly screening by saliva RT-qPCR testing (quantitative reverse-transcriptase polymerase chain reaction). The test was available for all workers and students of ULiege. This screening was planned to allow an early detection of any contaminated person. If the sensitivity of this test is lower than the naso-pharyngeal swap sample (91% instead of 98%) (Czumbel et al., 2020), it was proven useful as a screening test since it is cheaper and allows a less invasive self-sampling. Any person that tested positive was recommended to notify authorities and respect a mandatory 7- to 10-day self-quarantine period. ULiege students and workers' compliance in adopting the different measures was necessary for the control program to be effective. In addition, an intense communication effort regarding mitigation measures to be implemented was undertaken for the 2020–2021 academic year.

This study aimed at assessing (i) the acceptance level of the different barrier measures by ULiege staffs and students, (ii) the determining factors of their adoption and (iii) their reported level of implementation in order to be able to better react to COVID-19 like health events in the future and improve its management in situ.

2 | MATERIALS AND METHODS

2.1 | Survey development and methodology

In order to assess the individual perceptions of students and workers of ULiege towards hygiene measures and control program established for the academic year 2020–2021, an online survey was developed to record the respondents' perceptions and their eventual changes over time. The survey started on 28 September 2020 and ended on 6 November 2020.

The questionnaire (Appendix S1) included a general section in order to collect different socio-demographic variables and respondent history regarding COVID-19. In addition, a section to assess different HBM mental constructs and an additional section including different questions with respect to respondent's perception of COVID-19 in general were included in the questionnaire.

In the first section, respondent socio-demographic variables considered in the study were gender, country of origin, faculty and status (e.g. student, academic or administrative staff). Then in the second section, questions to determine the HBM constructs in addition to anxiety were formulated based on good practices (Cummings et al., 1978) and questionnaires used in other studies (Renault, 2020; Vande Velde et al., 2015). The 'susceptibility', 'severity', 'health motivation' and 'anxiety' were assessed indirectly by a set of questions. For each question respondents were asked to rate their level of agreement with different statements on a 0 (fully disagree) to 9 (fully agree) scale. Nine protective measures were considered: complying with the recommended period of quarantine if tested positive or in case of a high risk contact, regularly washing hands, wearing a face-mask, physical distancing, limiting the social bubble to the number specified by the national authorities, getting regularly tested (participation in the saliva testing organised by ULiege) and getting vaccinated as soon as possible. For each of these measures, the respondents were first asked to rate on a 0–9 scale its effectiveness, and the importance of the perceived constraints (e.g. time, burden, cost, life quality) linked to its implementation. To measure the adoption level of control measures, respondents were asked to specify how frequently they used to implement each control measure on a 0 (never) to 9 (always) scale. For measures not always applicable (e.g. applicable only in case of positive test result or high-risk contact), the respondent's willingness to implement them was assessed on a 0 (Not at all) to 9 (Yes, always) scale. In case the benefits of a measure was scored as good ($\geq$4) but the reported frequency of implementation was low ($\leq$5), an open question was asked in order to determine the main reason for non-implementation.

The third section included different questions suggested by the WHO Survey tool and guidance in order to monitor risk perception, preventive behaviours, emotional status and trust towards the government and different sources of information (World Health Organization, 2020). Six questions were chosen and paired based on topic. For each pair of questions, only one out of the two questions was randomly chosen and asked to respondents in order to keep the interview process short (10 min as target).

The survey was developed on LimeSurvey in English and French. It was tested by 4 persons from ULiege community before its final validation and dissemination. Invitations to fill in the online survey were sent through the platform used to retrieve saliva test results and published in the journal My news of the ULiege in October 2020 in order to reach the persons that were not getting tested. The data collection was carried out from the 28 September to the 6 November 2020 due to COVID-19 'Code Red' issued in ULiege, that is, the closure of any in-person activity at ULiege and therefore the suspension of the saliva testing on the 26 October 2020.

2.2 | Descriptive statistics and analyses by subgroups

The data collected was extracted in Excel. Based on the general section of the questionnaire on socio-demographic data, an exploratory analysis was performed to assess the frequency distribution of respondents in the different subgroups. The attitudes and beliefs among the different subgroups were compared using contingency analysis (and chi-square statistical tests) or ordinal logistic regression.

2.3 | Assessment of the different HBM constructs by structural equation modelling

Structural equation modelling (SEM) relies on an existing theory, the HBM in our case, and combines exploratory factor analysis and multiple regression in a model based on a network of relationships between both measured variables and latent constructs (Schreiber et al., 2006; Suhr, 2006). A latent construct is an unobserved variable measured indirectly by a set of different observed variables. In our case, the five different constructs of the HBM representing the individuals' perceptions have been measured either directly (benefits and barriers) or indirectly through different questions (susceptibility and severity of COVID-19 and health motivation) and a psychological variable, called 'anxiety' was added to the model (Figure 1). The perceptions measured indirectly represent the latent constructs of the model.

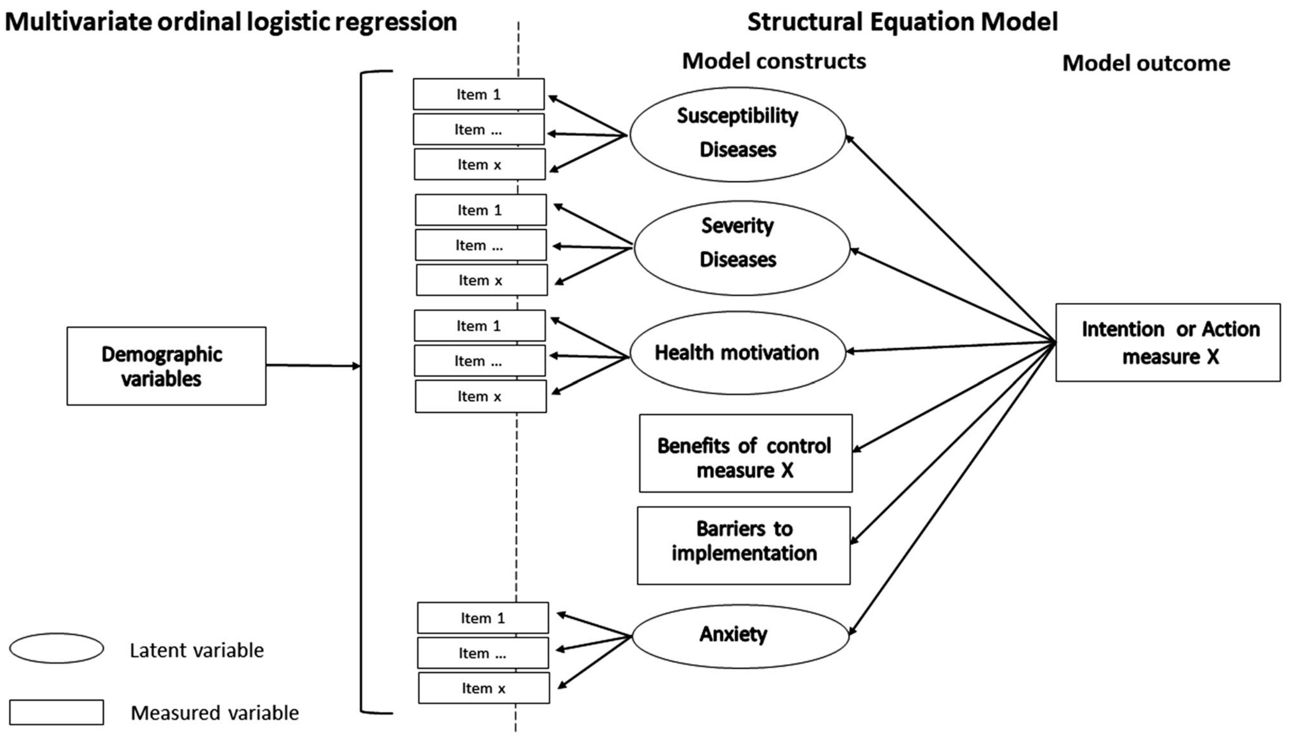

FIGURE 1 The Health Belief Model

The data collected was randomly split in two datasets on which an exploratory (EFA) and a confirmatory factor analysis (CFA) were performed with the Lavaan package in R studio (version 3.6.1 2019-07-05) to confirm the number of factors to consider and the questions related to each of them. Once the contribution of the different questions and sub-questions to the different latent factors were identified by the EFA and confirmed by the CFA, SEM were developed using maximum likelihood estimation to evaluate the influence of the different HBM constructs, on the actual behaviour or intention to implement the behaviour. A SEM analysis was performed for each control measure and overall. For the SEM related to the overall measures' implementation, the average of the scores obtained for each of the 9 measures was used to calculate the global benefits' perception, barriers' perception and measures' implementation scores. The reliability of the different models were assessed by different fit indexes and their usual cut-off values (Schreiber et al., 2006): Tucker Lewis index (tli) $\geq$ 0.95, comparative fix index (cfi) $\geq$ 0.90, standardized root mean square residual (srmr) < 0.08 and root mean square error of approximation (rmsea) < 0.08 with confidence interval. The significant relationships in the SEM model were identified by a p value < .05.

To confirm the SEM results (especially in the case of some unsatisfactory fitting indexes), a multivariable ordinal logistic regression was performed using behaviours as outcome variables and latent constructs as explanatory variables. For the latter, a composite score equivalent to the average score of each of the questions contributing to a given factor was calculated and used as explanatory variables with higher scores corresponding to higher perceptions of the HBM constructs. Significant determining latent constructs identified through the multivariable ordinal logistic regression were then compared to the latent variables having a significant relationship in the SEM model.

2.4 | Influence of socio-demographic variables on the HBM constructs

Based on the composite scores obtained for each HBM construct, the influence of the different socio-demographic variables on the HBM constructs was assessed by a multivariable ordinal logistic regression model. This influence was considered as significant for p value < .05.

3 | RESULTS

3.1 | Descriptive statistics

A total of 921 complete responses were received out of which 55 responses were filled for a second time by the respondents. When comparing the number of responses obtained to the maximum number of persons tested weekly by the screening (12,163 on week 42), the response rate was 7.6% (for the respondents working in one faculty or more). The response rate in the different faculties or services (for the respondents working in one faculty only) varied from 1.35% (for The Liege school of Management) up to 6.36% (for the general services and administration staff) with 1.01 to 2.01% of the students and 0.70 up to 7.36% of the personnel represented in each faculty (Figure 2 and Appendix S2). The profile of the respondents is made of 66% women

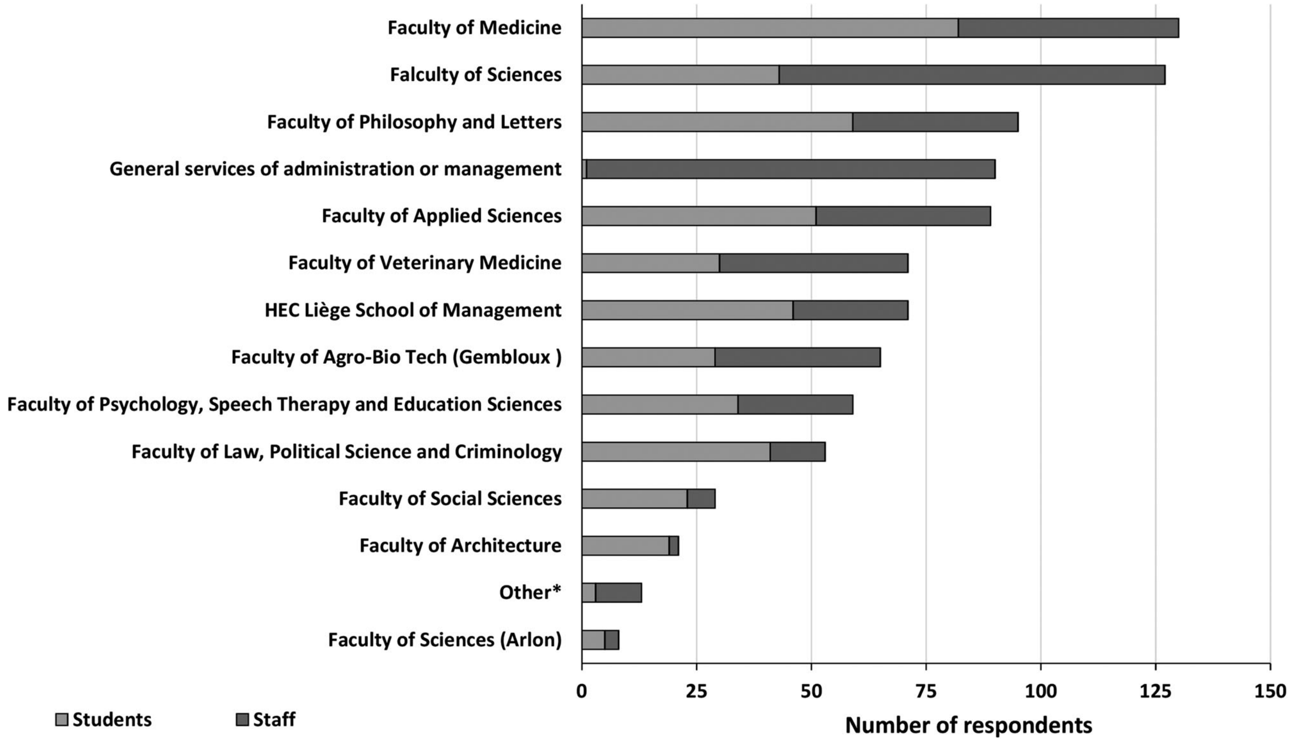

FIGURE 2 Repartition of the respondents per faculty. Legend: Others* indicate students and staff belonging from two other faculties

TABLE 1 Respondents' profile (expressed in percentage, $N = 866$)

	Gender			
	Female	Male	Other	Total
Gender	66	34	0	100
Status				
A bachelor student	18	9	0	27
A master student	17	7	0	24
A scientific and academic staff	17	11	0	28
A technical staff or worker	2	3	0	5
An administrative staff	10	3	0	13
Other	2	1	0	3
Known previous high risk contact				
No	42	23	0	66
Yes	23	11	0	34
Already tested for COVID-19 before Uliege screening?	0	0	0	0
No	49	26	0	75
Yes	17	7	0	25
Tested positive (in % of the persons tested)	13	11	0	12

and 34% men with 51% students, 46% staffs and 3% others (Table 1). The sample and the targeted population had similar sex ratios.

Among the respondents, 34% had a previous high-risk contact and 5% had already been tested positive either prior to the saliva tests or through the saliva screening. Among the persons tested positive at least once, 96% of them reported that they alerted their contact persons, 92% reported that they applied the recommended period of quarantine and 71% reported that they notified the ULiege authorities. A large majority, 98%, answered that they would participate to the ULiege screening in the future and 38.5% estimated that the control measures (including the saliva tests) established by the ULiege would be sufficient and effective to control the coronavirus infections within ULiege (31.5% said they would not and 30% did not know).

A large majority of the respondents (64%) consider close contact as the main contamination pathway, aerosol projections as the second (30%) and indirect contact as the least frequent (6%) (Appendix S3A). Less than 30% of the respondents strongly agree with the statement describing a stressed emotional status (Appendix S3B). Nevertheless, more than 50% of the respondents perceive COVID-19 as a disease spreading fast and more than 75% consider the pandemic as media hyped. Forty per cent of the respondents consider the decisions regarding the national control program adapted and consider the restrictions as justified (Appendix S3C).The level of trust of the respondents towards the different sources of information shows a low level of confidence towards social media and the press and a high level of trust towards health professionals and health authorities (Appendix S3D).

Regarding control measures to be implemented, a majority (>50%) of respondents mentioned implementing them (or intending to implement them) most of the time or always except for four measures: respecting a physical distance of 1.5 m, avoid any direct physical contact with more persons than the recommended number, respect the recommended period of quarantine in case of known contact with an

TABLE 2 Reported implementation rate of the different control measures (expressed in percentage)

Measures	Very low (0–2)	Below average (3–4)	Above average (5–7)	High (8–9)	I don't know
Implemented (0: never to 9 : always)					
Frequently wash my hands with soap and water or use disinfectants to clean hands (at least when entering and exiting a public place (e.g. shop, classroom, restaurant)	1	4	24	72	0
Wear a mask in all public places	0	2	9	89	0
Respecting a physical distance of 1.5 m	2	14	52	32	0
Avoid any direct physical contact with more persons than the recommended number	7	18	32	42	0
Getting regularly tested as per the ULiege protocol (salivary test) in order to check my infectious status	4	2	15	79	0
Intention to implement (0: never to 9 : always)	0	0	0	0	0
Provide a list of my contact persons the last 7 days if requested (tracking or tracing)	5	7	22	64	2
Respect the recommended period of quarantine if tested positive	1	1	6	91	1
Respect the recommended period of quarantine in case of known contact with an infected individual	5	13	31	48	2
Getting vaccinated as soon as the vaccine is available	19	14	20	34	13

infected individual and getting vaccinated as soon as the vaccine is available (Table 2).

We noticed some sub-groups differences (Table 3). Some measures are less respected by men; it is the case of wearing a mask in all public places and frequently washing hands. Except wearing a mask in public places, every measure tested (physical distance, testing, contact with more persons than recommended and washing hands) is less respected by ULiege students compared to workers. In case of an infection or a contact with an infected person, men and students (vs. workers) are less willing to respect the recommended period of quarantine and to provide a list of contact persons. On the other hand, women are less ready to be vaccinated as soon as the vaccine is available than men. Regarding the compliance or intention to comply (for measures to be implemented only in case of infection, contact, or availability of the vaccine), we observe no significant difference between the medical and non-medical faculties.

3.2 | Structural equation model

In order to implement the SEM, 148 responses with missing answers for the questions needed to assess the different HBM constructs were omitted. The model was therefore based on 773 responses.

The EFA determined that the different scores issued from the 13 questions asked to assess the health motivation, susceptibility and severity (Appendix S4) were contributing to 4 factors or latent constructs as shown in Table 4. An additional component labelled as 'Anxiety' was added to the HBM. The CFA showed good fitting indexes for these four latent constructs (Figure 3a) with a cfi and a tli equal to 0.9 and the rmsea and srmr of 0.07.

The hypothesized model (Figure 3b) for the overall implementation appears to be acceptable but not ideal [cfi: 0.9, tli: 0.8, rmsea: 0.09 (0.08–0.09), srmr: 0.11]. A post hoc modification model was tested by removing the 'anxiety' construct but did not bring any improvements to the model. No additional post hoc modifications were conducted as the fit indexes were considered acceptable with at least 1 of them considered as good at the exception of the SEM model related to the measure 9, getting vaccinated as soon as possible (Table 5).

The model shows that the perceptions of COVID-19 severity, control measures' benefits and health motivation of the respondents are positively related to the implementation of these measures while the perception of COVID-19 susceptibility is negatively related to the overall implementation.

When looking at the SEM analysing the relationship for the nine specific measures (Table 5 and Appendix S5), it appears that the benefit perceptions are positively related to the implementation of the 9 measures and the anxiety profile of the respondents does not have any significant relationship with any of the measures. The barrier perceptions are negatively correlated to the implementation for all the measures except measure number 5 (M5) (wearing a mask). Health motivation is positively correlated to all the measures except M3 (quarantine in case of high-risk contact) and M8 (participate to the saliva testing). The severity is positively correlated with the implementation of M3 (quarantine in case of high-risk contact), M6 (respecting physical distancing) and M7 (respecting the social bubble) while these three BSM are negatively correlated with susceptibility. For the nine SEM, at least 1 of the fitting indexes shows a good fit.

3.3 | Multivariate ordinal logistic regression model

3.3.1 | Influence of the HBM constructs on the control measures' implementation

Because the fitting indexes of the overall SEM model are not perfect with only 1 or 2 of the fitting indexes of the measure specific SEM

TABLE 3 Results of the sub-group comparison by ordinal logistic regression for (A) the actions and (B) the intentions

(A) Actions

		N	Wearing a mask		Respecting physical distance		Avoiding direct physical contacts		Getting regularly tested		Frequently washing my hands	
			Coeff	*p*	Coeff	*p*	Coeff	*p*	Coeff	*p*	Coeff	*p*
Sex	Ref = Female	512										
	Male	259	**0.46**	**<.0001**	0.12	.113	0.06	.405	0.05	.536	**0.26**	**.001**
Status	Ref = academic or scientific staff	220										
	Student	388	0.14	.130	**0.60**	**<.0001**	**0.44**	**<.0001**	**0.32**	**<.0002**	**0.24**	**.001**
Faculty	Ref = Faculty of Medicine or veterinary Medicine	171										
	Other faculties (non-medical)	470	0.00	.984	0.08	.475	0.08	.325	0.08	.426	−0.07	.375

(B) Intentions

		N	Respecting the quarantine period if tested positive		Respecting the quarantine period in case of high risk contact		Providing the list of my contact persons		Getting vaccinated as soon as possible	
			Coeff	*p*	Coeff	*p*	Coeff	*p*	Coeff	*p*
Sex	Ref = Female	512								
	Male	259	**0.29**	**.006**	**0.18**	**.019**	0.19	.162	**−0.37**	**<.0001**
Status	Ref = academic or scientific staff	220								
	Student	388	**0.54**	**<.0001**	**0.34**	**<.0001**	**0.37**	**<.0001**	0.12	.124
Faculty	Ref = Faculty of Medicine or veterinary Medicine	171								
	Other faculties (non-medical)	470	−0.09	.445	−0.012	.884	0.07	.410	0.11	.188

N, number; Coeff, coefficient; ref, reference,
Bold values indicate significant associations.

models indicating a good fit, a complementary multivariable ordinal logistic regression model was run in order to confirm the results using composite scores for the latent constructs. The significant relationships ($p < .05$) identified between the different HBM constructs and the measures' implementation either individually or overall were the same as in the SEM model (Table 6).

3.3.2 | Influence of socio-demographic variables on the HBM constructs

The different socio-demographic characteristics (sex, age and faculty) as well as the previous history with COVID-19 (previous high-risk contact and previous positive test) have some significant impact on the different HBM constructs (Table 6) and therefore an indirect effect on the implementation of control measures (Figure 4).

The males have a significantly lower perception of the overall biosecurity measures' benefits and a lower health motivation. Older people have a higher perception of the severity of the disease and of the overall benefits of control measures but also a higher perception of the implementation of barrier measures. The students have a higher perception of the susceptibility and the administrative staff a higher perception of the severity.

Most of the non-medical faculty members generally have a lower health motivation than the members of the Faculty of Medicine. Individuals from a few faculties have a lower perception of the overall benefits (HEC and 'Other') and a higher perception of the barriers (Faculty of Law and Faculty of Veterinary Medicine).

Having a history of high-risk contact with a positive person is related to a higher perception of susceptibility and barriers and a lower perception of severity, heath motivation on benefits. People that have already been tested positive to COVID-19 have a significantly higher perception of the susceptibility and benefits, a lower perception of barriers and a higher health motivation.

4 | DISCUSSION

It has been demonstrated that in case of pandemics, the necessary social behaviour changes needed to control the disease are determined by different demographic and attitudinal determinants (Bish & Michie, 2010). Therefore, communication to promote these behavioural changes should target some specific groups and stress the beliefs and attitudes having the main influence on the behaviour adoption (Arden & Chilcot, 2020). Only a few studies have been published so far regarding the determinants of the adoption of the COVID-19

TABLE 4 Results of the exploratory and confirmatory factor analysis ($N = 773$)

Question code	Are you in agreement with the following sentences (0: fully disagree to 9: fully agree)	Factor loading	Latent factor
Psy (1)	Compared to other people of my age. I am a careful person	0.88	Health motivation
Psy (2)	Compared to other people of my age. I am really careful about my health	0.65	
PHR (2)	We all have a collective responsibility in the fight against the coronavirus as any of us could be spreading the disease involuntarily	0.39	
Psy (3)	Compared to other people of my age. I am more likely to be sick	0.44	Anxiety
Psy (4)	Compared to other people of my age. I am a worried person	0.7	
Susc (1)	I consider that for me avoiding an infection with COVID-19 in the current situation is extremely difficult	0.59	Susceptibility
Susc (2)	Based on the number of contacts I am having and the actual COVID-19 context. I think that the probability (chances) for me to be in contact with an infected person without knowing it are really high	0.67	
Susc (3)	I believe that any person could be a carrier of the COVID-19 and contaminate me without knowing it	0.56	
Susc (4)	I believe that COVID-19 is easily transmitted by direct contact or through contaminated materials or surfaces	0.82	
PHR (1)	There is a high probability for me to be unknowingly infected by the coronavirus and therefore to contaminate other persons	0.6	
Sev (1)	If I was contracting COVID-19. I believe I would be very severely ill	0.81	Severity
Sev (3)	I think the coronavirus (SARS-Cov2) is a very dangerous virus severely affecting the health of the persons infected over a long time	0.72	
Sev (4)	I believe that getting infected by the coronavirus would severely affect my life in general over a long time	0.92	

Fit indexes of the confirmatory factor analysis model: comparative fix index (cfi): 0.91, Tucker Lewis index (tli): 0.88; root mean square error of approximation (rmsea): 0.07 (0.06–0.08) and standardized root mean square residual (srmr): 0.07. Each question code refers to the code used in the Appendix S1.

TABLE 5 Results of the different structural equation models showing the coefficients of the significant relationships ($p < .05$) and the fitting indexes

		Overall	M1	M2	M3	M4	M5	M6	M7	M8	M9
Health belief model constructs	Health motivation	0.22	0.09	0.13	NS	0.22	0.25	0.32	0.26	NS	−0.06
	Anxiety	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Severity	0.18	NS	NS	0.18	NS	NS	0.29	0.12	NS	NS
	Susceptibility	−0.09	NS	NS	−0.13	NS	NS	−0.13	−0.16	NS	NS
	Barriers	NS	−0.31	−0.07	−0.13	−0.08	NS	−0.11	−0.18	−0.1	−0.16
	Benefits	0.55	0.47	0.42	0.56	0.38	0.39	0.26	0.39	0.25	0.8
Fit indexes	cfi	0.88	0.88	0.88	0.87	0.88	0.89	0.86	0.86	0.88	0.85
	tli	0.81	0.84	0.85	0.83	0.84	0.85	0.82	0.81	0.84	0.81
	rmsea	0.09 (0.08–0.1)	**0.08 (0.07–0.08)**	**0.07 (0.06–0.08)**	**0.08 (0.07–0.08)**	**0.07 (0.07–0.08)**	**0.07 (0.06–0.08)**	**0.08 (0.07–0.08)**	**0.08 (0.08–0.09)**	**0.07 (0.06–0.08)**	0.10 (0.09–0.10)
	srmr	0.11	**0.08**	**0.08**	**0.09**	**0.08**	0.09	**0.08**	0.1	**0.07**	0.1

Fix indexes: cfi, comparative fix index; tli, Tucker Lewis index; rmsea, root mean square error of approximation; srmr, standardized root mean square residual. In bold, fit indexes of the confirmatory factor analysis model that are in the range with the recommended values (other are close to the range). NS: non-significant ($p > .05$); M1: provide a list of my contact persons the last 7 days if requested; M2: respect the recommended period of quarantine if tested positive; M3: respect the recommended period of quarantine in case of known contact with an infected individual; M4: frequently wash my hands with soap and water or use disinfectants to clean; M5: wear a mask in all public places; M6: respecting a physical distance of 1.5 m; M7: avoid any direct physical contact with more persons than the recommended number; M8: getting regularly tested (saliva test); M9: getting vaccinated as soon as the vaccine is available.

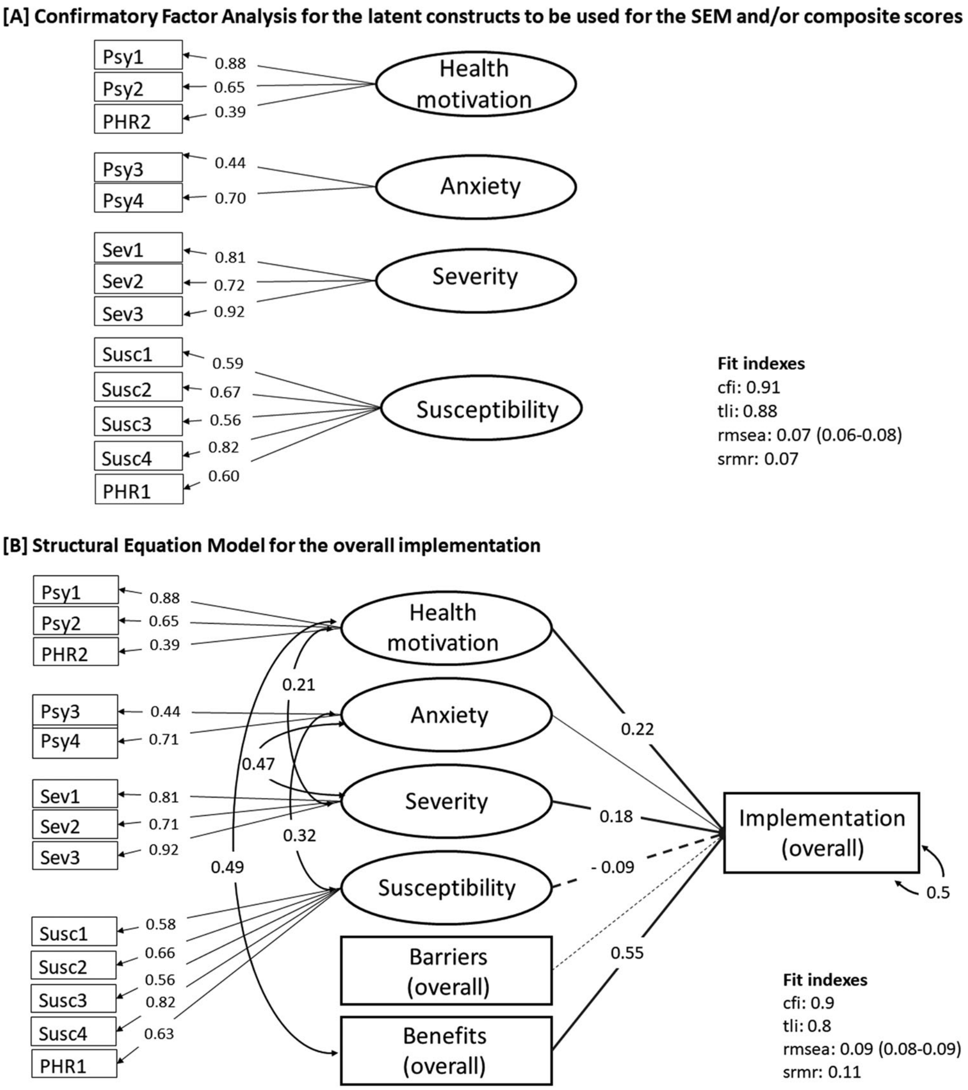

FIGURE 3 Results of the structural equation model (SEM) related to the overall measures' implementation. (a) Confirmatory factor analysis for the latent constructs to be used for the SEM and/or composite scores. (b) Structural equation model for the overall implementation. In (b), bold arrows indicate significant correlation ($p < .05$); continuous line indicates positive correlation; discontinuous line indicates negative correlation

control measures and to the best of our knowledge, none of the existing studies have analysed the general implementation of the control measures. If some measures such as wearing masks appear to be more important than other for the control of the pandemic (Zhang et al., 2020), the effectiveness of control programs relies on the implementation of all measures together. Such studies are essential in order to be able to communicate more efficiently to the public and increase the level of adoption of prevention and control measures by the population (Arden & Chilcot, 2020).

This study was designed in parallel with the saliva screening organised at ULiege in order to assess the acceptability and adoption of the control program established by ULiege authorities. Therefore, the survey was mainly disseminated through the platform used to deliver the test results and was only largely disseminated to all once through the monthly journal of ULiege. The study sample represents 7.6% of the population tested during week 42 (week with the highest number of persons tested). Five per cent of the respondents were tested positive while the percentage of positive tests during saliva screening was 4%. We can therefore consider the population as representative of the population who participated to saliva screening. The sex ratio among the students and the staff in the sample population and the studied population were not significantly different and could therefore be representative of the overall ULiege members. Nevertheless, the limited survey diffusion to participants which took part to the saliva testing represents a potential bias and any extrapolation to the overall members of ULiege population should be made with caution.

This study shows that the perception of the COVID-19 severity and of the benefits of control measures are significantly associated to a higher level of implementation as well as health motivation of individuals (including the sense of collective responsibility). The importance of health motivation and especially the sense of collective responsibility and empathy was also demonstrated in other studies (Gibson Miller

TABLE 6 Results of the ordinal logistic regression model ($N = 773$)

			Susceptibility		Severity		Health motivation		Overall benefits		Overall barriers		Overall implementation	
		N	Coeff	*p*	Coeff	*p*	Coeff	*p*	Coeff	*p*	Coeff	*p*	Coeff	*p*
Sex	**Ref = Female**	512												
	Male	259	−0.17	.223	−1.18	.219	**−0.67**	**<.001**	**−0.42**	**.005**	**0.6**	**.662**	−0.27	.066
	Other	2	1.14	.303	−1.71	.157	−1.41	.226	−1.01	.431	0.8	.945	−1.42	.191
Age groups (1: youngers to 4: olders)			0.18	.059	**0.32**	**.001**	0.17	.082	**0.34**	**.001**	**0.24**	**.01**	**0.30**	**.00**
Status	**Ref = Academic or scientific staff**	**220**												
	Student	388	**0.79**	**<.001**	0.11	.605	−0.10	.673	−0.24	.290	0.42	.057	**−0.62**	**.01**
	Technical staff or worker	40	−0.45	.134	0.05	.885	−0.17	.596	**−0.74**	**.03**	−0.08	.791	−0.39	.237
	Administrative staff	98	0.28	.286	**0.60**	**.027**	0.43	.112	−0.14	.628	0.23	.395	−0.06	.826
	Other	27	−0.05	.885	0.17	.624	0.08	.834	−0.37	.345	0.40	.284	−0.74	.067
Faculty	**Ref = Faculty of Medicine**	**109**												
	Faculty of Agro-Bio Tech (Gembloux)	58	0.12	.665	−0.31	.264	**−0.84**	**.004**	−0.21	.475	0.46	.117	−0.56	.057
	Facutly of Applied Sciences	75	−0.26	.315	0.30	.266	−0.21	.450	−0.23	.402	−0.10	.691	−0.15	.573
	Faculty of Architecture	17	−0.36	.435	0.39	.368	−0.41	.368	−0.9	.841	0.35	.410	−0.65	.146
	Faculty of Law, Political Science and Criminology	48	−0.10	.740	0.44	.150	**−0.70**	**.027**	−0.39	.219	**0.80**	**.007**	−0.45	.160
	Faculty of Philosophy and Letters	77	0.38	.156	0.47	.070	**−0.64**	**.02**	−0.18	.524	0.49	.069	−0.08	.779
	Faculty of Psychology, Speech Therapy and Education Sciences	52	0.26	.419	0.34	.242	**−0.71**	**.018**	−0.34	.287	0.03	.932	−0.33	.299
	Faculty of Sciences	101	0.12	.619	0.19	.432	−0.34	.178	−0.03	.905	0.13	.582	−0.22	.398
	Faculty of Veterinary Medicine	62	0.51	.069	0.15	.593	−0.31	.271	0.97	.739	**0.59**	**.039**	−0.44	.132
	General services of administration or management	73	0.10	.759	−0.53	.103	**−1.17**	**<.001**	−0.62	.067	0.59	.070	−0.53	.121
	HEC Liège School of Management	55	0.39	.182	0.25	.387	−0.35	.233	**−0.62**	**.039**	0.44	.127	**−0. 70**	**.018**
	Other	46	0.39	.233	0.01	.986	**−1.04**	**.001**	**−0.68**	**.041**	0.48	.122	**−0.86**	**.008**
Known high-risk contact	Ref = Yes	**265**												
	No	**508**	**0.56**	**<.001**	**−0.41**	**.004**	**−0.52**	**<.001**	**−0.40**	**.006**	**0.30**	**.033**	**−0.64**	**<.001**
Already tested positive	Ref = Yes	**51**												
	No	**722**	**0.80**	**.003**	0.42	.877	**0.55**	**.047**	**0.66**	**.019**	**−0.63**	**.024**	**0.63**	**.023**

N, number; Coeff, coefficient; Ref, reference.
Bold values indicate significant associations.

et al., 2020; Liekefett & Becker, 2021; Moussaoui et al., 2020) and seems to be a key to induce behaviour changes. Another study based on the HBM did not mention health responsibility but highlighted the perceived severity at population level, as having a higher influence on the measures' implementation than the perceived personal susceptibility or severity (N'Goala et al., n.d.). Responsibility towards public health is an argument frequently used and expressed by national authorities in their communication plans. Severity and benefit perceptions were also previously identified as behaviour change determinants (Bish & Michie, 2010; Moussaoui et al., 2020; Wise et al., 2020). A higher susceptibility perception is associated with a lower level of implementation of control measures which could be surprising as the opposite

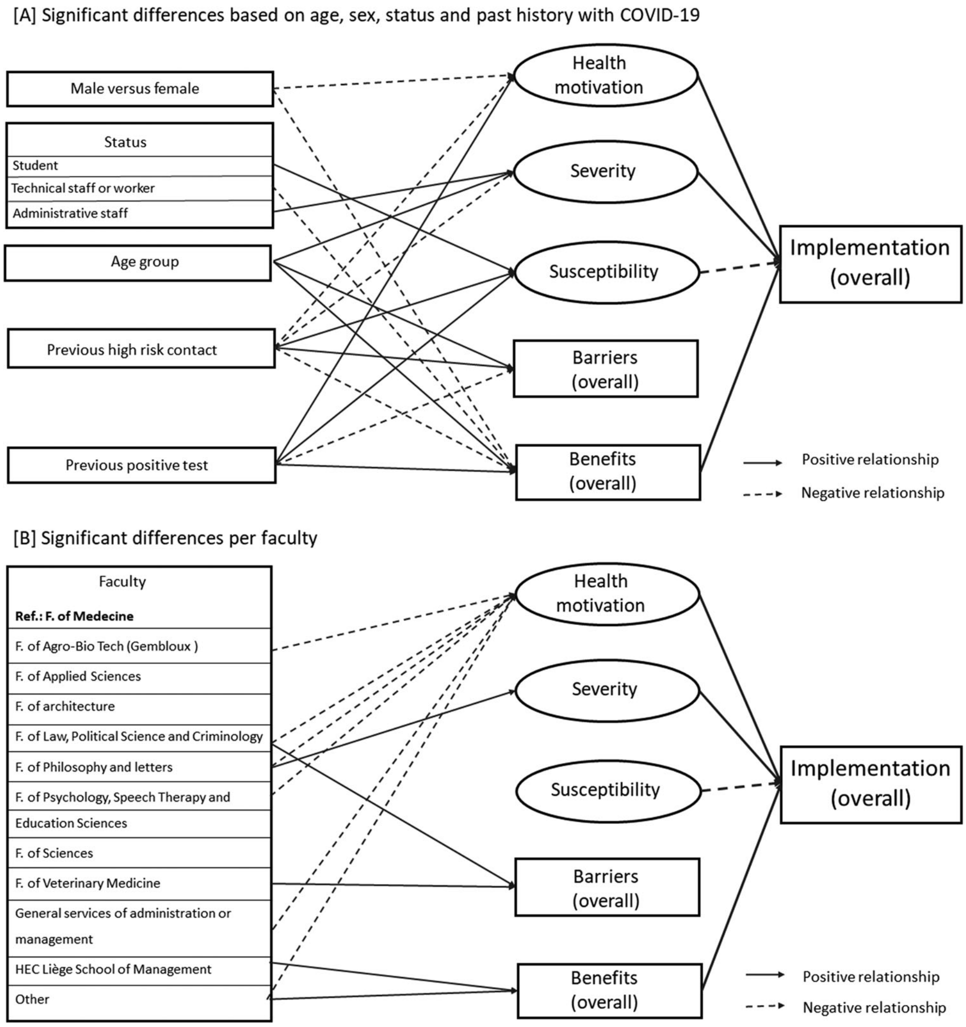

FIGURE 4 Effect of the socio-demographic variables on the Health Belief Model constructs and of the HBM constructs on the barrier gestures' implementation. (a) Significant differences based on age, sex, status and past history with COVID-19. (b) Significant differences per faculty. Rectangle-shape indicates observed variables and oval-shape indicates latent constructs

association would have been expected (Bish & Michie, 2010). It could be explained by a sense of powerlessness, 'the likelihood of being infected is so high that nothing could prevent us from being infected' or the perceived lack of individual control on the prevention of the disease that is described as a barrier in the health belief model. Indeed, a person would be less likely to engage into a protective behaviour if he considers that the control of the disease does not rely on its action but on others. This perception was defined as a 'drop-in the bucket feeling' by some authors and highlighted as a social dilemma having a detrimental impact on the implementation of prevention and control behaviours (Attari et al., 2014; Bonniface & Henley, 2008). In fact, during the study, the COVID-19 situation in Belgium as a whole changed drastically with the appearance of the second wave (https://epistat.wiv-isp.be/covid/covid-19.html) which could have triggered a feeling of powerlessness. In addition, this hypothesis is partially confirmed when analysing the open question related to the non-implementation of the control measures where the inability to keep physical distancing frequently is related to external reasons such as work or study conditions, living in community and public transports. This finding should be further investigated in order to better understand this hypothesis (e.g. by carrying out the same study during the COVID-19 disappearance). Anxiety and barriers have respectively a positive and a negative correlation with implementation, but the difference is not significant.

Based on these findings, it is important to further analyse the socio-demographic determinants that could influence the four perceptions having a significant impact on the level of implementation in order to identify specific target groups and themes to be included in the communication plans.

Health motivation is significantly lower for the members of non-medical faculties (Figure 4b) and for males. Older persons have higher perceptions of control measures' benefits and of disease severity. A previous study on protective behaviours during a previous pandemic (H1N1) also identified older persons as persons with the highest adoption rate or protective behaviours (Bish & Michie, 2010). This finding seems logical as the persons over 65 years old represent a population with a higher risk of contracting the COVID-19 and to develop severe forms of the disease. Persons that were previously affected by COVID-19 or who know people that were affected, are considered as possible cues to action for having a direct and positive impact on behaviour implementation (Abraham & Sheeran, 2015). In our study respondents that were previously tested positive have a higher perception of the susceptibility and a higher perception of the benefits and health motivation, which should overall predict a higher implementation rate as expected. Nevertheless, respondents that had a previous high-risk contact with an infected person are more likely to have a lower perception of the severity and benefits, a higher perception of the susceptibility and barriers and a lower health motivation. All these elements are associated with a lower implementation rate of biosecurity measures, which is quite surprising. The reason might be linked to the sense of powerlessness already mentioned above or some other social dilemmas not considered by the HBM such as the non-implementation based on the fact that no one else does it, known as 'sucker effect', or because all the others are doing it so it is not necessary for one self to do it, known as 'free-riding' (Moussaoui et al., 2020). These elements might be worth investigating further.

The findings of this survey suggest possible improvements to communication plans regarding COVID-19 prevention and control at the ULiege. It would be advised to intensify communication regarding the sense of self and collective health responsibility, especially in non-medical faculties. In addition, young people should be targeted with communication showing the benefits of control measures, especially in preventing severe consequences for the persons at risk in order to increase their health motivation and their benefits and severity perceptions, three key mental constructs identified as lower in the younger population and positively related to the implementation of measures. The need to promote behaviours through enhanced public responsibility and common interest have been previously identified as a key factor to ensure population cooperation in case of crisis (Drury, 2018) and was proven efficient in previous communication strategies (Carter et al., 2015). It was highlighted as particularly important in Western Europe where people are, compared to Asia, less likely to accept individual freedom restrictions for the benefits of the community (Kraus & Kitayama, 2019; Triandis, 2001). It is particularly the case for COVID-19 preventive measures as (i) some measures are mainly protecting others (e.g. wearing masks) and (ii) some groups of the population are more vulnerable and need to be protected. In fact, people might be less likely to engage into a behaviour having negative impact on their immediate interests if they are not convinced that the concerned behaviour really protect the most vulnerable people. Messages promoting empathy should therefore be joined with evidence-based messages showing the effectiveness of the measures to protect others. With respect to diseases such as COVID-19 where the severity highly varies with factors such as age (younger people being less severely affected), co-morbidity (people suffering from previous aggravating illnesses more severely affected), empathy is particularly important for the strongest to comply with barrier measures knowing that it is their way out to protect the weakest or most vulnerable ones (Attari et al., 2014) by emotionally understanding what the latter are going through. The lack of understanding the importance of applying measures to protect others and not only oneself was considered a factor in explaining the low compliance observed in France during the first months of the pandemic as communication mainly focused on fear (N'Goala et al., n.d.).

To achieve higher effectiveness, the communication strategy should consider the possible sources of information and prioritise the one considered as most trustful. It appears clearly from our study that the media and social networks are not considered as trustful sources of information. Communication should therefore originate from health workers, public health institutions and/or ECDC considered as the most trustful and, on a lower level, from the national COVID-19 information website and the national Security Council. Nevertheless, the possible positive influence of social media was highlighted if used to reinforce the perceived social norm by increasing the visibility of appropriate behaviours (Bond et al., 2012) or having the message spread by individuals considered as peers and/or sharing a common identity with the target group (Abrams et al., 1990).

As the perceptions might evolve based on the context and in order to evaluate the effectiveness of the communication addressed to the members of ULiege, the survey should be applied again over time in order to capture trends or perception changes related to eventual interventions or contextual changes. It might also be valuable to better disseminate the survey as to include all faculty personnel in order to have a study population more representative of the Belgian population (with respect of the age stratum). This would allow to extrapolate findings at the country level.

5 | CONCLUSION

This original study allowed identifying the key determinants of the adoption of protective behaviours by members of ULiege. It provides key recommendations for communication plans to authorities aiming at improving the level of implementation of control measures including the need to increase the sense of collective responsibility and the role students can play, if not to protect themselves, to protect the population at risk that can be severely affected by the disease. The survey should be continued and extended to a large population in order to monitor the trends of both perceptions and behaviours over time.

ACKNOWLEDGEMENTS

The authors would like to thank the colleagues who contributed to the development, implementation and outreach of the survey, as well as all the students and staff of ULiege who dedicated part of their time to fill in the questionnaire. This study was supported by University of Liege, as part of the institutional management strategy against the COVID-19.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Due to the nature of the study and the low risk exposure of the participants, formal approval from an Ethics Committee was not a requirement at the time of the study.

ORCID

Claude Saegerman https://orcid.org/0000-0001-9087-7436

REFERENCES

Abraham, C., & Sheeran, P. (2015). The health belief model. In P. N. Mark Conner (Ed.), *The health belief model* (3rd edn., pp. 30–69). McGraw-Hill. https://www.researchgate.net/publication/290193215_The_Health_Belief_Model/citations

Abrams, D., Wetherell, M., Cochrane, S., Hogg, M. A., & Turner, J. C. (1990). Knowing what to think by knowing who you are: Self-categorization and the nature of norm formation, conformity and group polarization. *British Journal of Social Psychology*, *29*(2), 97–119. https://doi.org/10.1111/j.2044-8309.1990.tb00892.x

Ali, I., & Alharbi, O. M. L. (2020). COVID-19: Disease, management, treatment, and social impact. *The Science of the Total Environment*, *728*, 138861. https://doi.org/10.1016/J.SCITOTENV.2020.138861

Arden, M. A., & Chilcot, J. (2020). Health psychology and the coronavirus (COVID-19) global pandemic: A call for research. *British Journal of Health Psychology*, 25(2), 231–232. https://doi.org/10.1111/bjhp.12414

Attari, S. Z., Krantz, D. H., & Weber, E. U. (2014). Reasons for cooperation and defection in real-world social dilemmas. *Judgment and Decision Making*, 9, 316–334.

Bish, A., & Michie, S. (2010). Demographic and attitudinal determinants of protective behaviours during a pandemic: A review. *British Journal of Health Psychology*, *15*(4), 797–824. https://doi.org/10.1348/135910710%D7;485826

Bond, R. M., Fariss, C. J., Jones, J. J., Kramer, A. D. I., Marlow, C., Settle, J. E., & Fowler, J. H. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, *489*(7415), 295–298. https://doi.org/10.1038/nature11421

Bonniface, L., & Henley, N. (2008). A drop in the bucket: Collective efficacy perceptions and environmental behaviour. *Australian Journal of Social Issues*, *43*(3), 345–358. https://doi.org/10.1002/j.1839-4655.2008.tb00107.x

Boterman, W. R. (2020). Urban-rural polarisation in times of the corona outbreak? The early demographic and geographic patterns of the SARS-CoV-2 epidemic in the Netherlands. *Tijdschrift Voor Economische En Sociale Geografie*, *111*(3), 513–529. https://doi.org/10.1111/tesg.12437

Carter, H., Drury, J., Rubin, G. J., Williams, R., & Amlôt, R. (2015). Applying crowd psychology to develop recommendations for the management of mass decontamination. *Health Security*, *13*(1), 45–53. https://doi.org/10.1089/hs.2014.0061

Cummings, K. M., Jette, A. M., & Rosenstock, I. M. (1978). Construct validation of the health belief model. *Health Education Monographs*, *6*(4), 394–405. http://www.ncbi.nlm.nih.gov/pubmed/299611

Czumbel, L. M., Kiss, S., Farkas, N., Mandel, I., Hegyi, A., Nagy, Á., Lohinai, Z., Szakács, Z., Hegyi, P., Steward, M. C., & Varga, G. (2020). Saliva as a candidate for COVID-19 diagnostic testing: A meta-analysis. *Frontiers in Medicine*, *7*. https://doi.org/10.3389/fmed.2020.00465

Drury, J. (2018). The role of social identity processes in mass emergency behaviour: An integrative review. *European Review of Social Psychology*, *29*(1), 38–81. https://doi.org/10.1080/10463283.2018.1471948

Gibson Miller, J., Hartman, T. K., Levita, L., Martinez, A. P., Mason, L., McBride, O., McKay, R., Murphy, J., Shevlin, M., Stocks, T. V. A., Bennett, K. M., & Bentall, R. P. (2020). Capability, opportunity, and motivation to enact hygienic practices in the early stages of the COVID-19 outbreak in the United Kingdom. *British Journal of Health Psychology*, *25*(4), 856–864. https://doi.org/10.1111/bjhp.12426

Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly*, *11*(1), 1–47. https://doi.org/10.1177/109019818401100101

Kraus, B., & Kitayama, S. (2019). Interdependent self-construal predicts emotion suppression in Asian Americans: An electro-cortical investigation. *Biological Psychology*, *146*. https://doi.org/10.1016/j.biopsycho.2019.107733

Liekefett, L., & Becker, J. (2021). Compliance with governmental restrictions during the coronavirus pandemic: A matter of personal self-protection or solidarity with people in risk groups? *British Journal of Social Psychology*, bjso.12439. https://doi.org/10.1111/bjso.12439

Moussaoui, L. S., Ofosu, N. D., & Desrichard, O. (2020a). Social psychological correlates of protective behaviours in the COVID-19 Outbreak: Evidence and recommendations from a nationally representative sample. *Applied Psychology: Health and Well-Being*, *12*(4), 1183–1204. https://doi.org/10.1111/aphw.12235

N'Goala, G., Gavard-Perret, M.-L., & Wilhelm, M.-C. (n.d.). *Le respect des gestes barrières face à l'épidémie de covid19 : Une explication par le modèle des croyances envers la santé*. Data COVID. Retrieved from https://datacovid.org/le-respect-des-gestes-barrieres-face-a-lepidemie-de-covid19-une-explication-par-le-modele-des-croyances-envers-la-sante/

Pfattheicher, S., Nockur, L., Böhm, R., Sassenrath, C., & Petersen, M. B. (2020). The Emotional path to action: Empathy promotes physical distancing and wearing of face masks during the COVID-19 pandemic. *Psychological Science*, *31*(11), 1363–1373. https://doi.org/10.1177/0956797620964422

Rahman, H. S., Aziz, M. S., Hussein, R. H., Othman, H. H., Salih Omer, S. H., Khalid, E. S., Abdulrahman, N. A., Amin, K., & Abdullah, R. (2020). The transmission modes and sources of COVID-19: A systematic review. *International Journal of Surgery Open*, 26, 125–136. https://doi.org/10.1016/j.ijso.2020.08.017

Renault, V. (2020). *Factors determining the implementation of measures aimed at preventing professional zoonotic diseases in veterinary practices*. University of Liege.

Schreiber, J. B., Stage, F. K., King, J., Nora, A., & Barlow, E. A. (2006). Reporting structural equation modeling and confirmatory factor analysis results: Review. *The Journal of Educational Research*, *99*(6), 323–337.

Suhr, D. (2006). The basics of structural equation modeling. *University of Northern Colorado*. https://doi.org/10.1007/s007840050036

Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality*, *69*(6), 907–924. https://doi.org/10.1111/1467-6494.696169

van Doremalen, N., Bushmaker, T., Morris, D. H., Holbrook, M. G., Gamble, A., Williamson, B. N., Tamin, A., Harcourt, J. L., Thornburg, N. J., Gerber, S. I., Lloyd-Smith, J. O., de Wit, E., & Munster, V. J. (2020). Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *New England Journal of Medicine*, *382*(16), 1564–1567. https://doi.org/10.1056/nejmc2004973

Vande Velde, F., Claerebout, E., Cauberghe, V., Hudders, L., Van Loo, H., Vercruysse, J., & Charlier, J. (2015). Diagnosis before treatment: Identifying dairy farmers' determinants for the adoption of sustainable practices in gastrointestinal nematode control. *Veterinary Parasitology*, *212*(3–4), 308–317. https://doi.org/10.1016/J.VETPAR.2015.07.013

Wise, T., Zbozinek, T. D., Michelini, G., & Hagan, C., & Mobbs, D. (2020). *Changes in risk perception and protective behavior during the first week of the COVID-19 pandemic in the United States. Royal Society Open Science*, *7*(9), 200742. https://doi.org/10.31234/osf.io/dz428

World Health Organization. (2020). *Survey tool and guidance: Rapid, simple, flexible behavioural insights on COVID-19* (WHO/EURO:2020-696-40431-54222). http://www.euro.who.int/pubrequest

Zhang, R., Li, Y., Zhang, A. L., Wang, Y., & Molina, M. J. (2020). Identifying airborne transmission as the dominant route for the spread of COVID-19. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(26), 14857–14863. https://doi.org/10.1073/pnas.2009637117

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

How to cite this article: Renault, V., Fontaine, S., Mpouam, S. E., & Saegerman, C. (2022). Main determinants of the acceptance of COVID-19 control measures by the population: A first pilot survey at the University of Liege, Belgium. *Transboundary and Emerging Diseases*, *69*, e1065–e1078. https://doi.org/10.1111/tbed.14410