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A cross-sectional study on the relationship between self-protective behaviour and socio-demographic, as well as, personal characteristics during the Covid-19 pandemic in the UK

MASTER THESIS

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Abstract

Background: As a result of the Covid-19 pandemic, measures to secure society's health were obliged by the government, for example, social distancing, wearing face masks and national lockdowns. The UK was severely impacted with the second-highest death rate of Covid-19 cases in Europe. Human behaviour is the strongest determinant for the spreading of the virus. The Health Belief Model gives a theoretical base for different determinants influencing health behaviours. Previous research has shown that the pandemic situation impacted different socio-demographic groups more or less strongly and that several determinants might play a role in engaging in health behaviours. Thus, further insights are required in order to understand and tackle the factors that influence the non-adherence to self-protective behaviour. **Objective:** The aim of the current study was to investigate whether socio-demographic and psychological characteristics, as well as the perceived severity and susceptibility to Covid-19, and the perceived benefits and barriers of performing the desired behaviour, as described in the Health Belief Model, are predictive factors for engaging in self-protective behaviours as recommended by the government in order to reduce the spread of the Coronavirus disease. **Method:** For this cross-sectional study, 1001 participants, living in the UK, were recruited to participate in an online questionnaire. Measures included demographics, housing situation, work and employment status, health and psychological statuses, self-protective behaviours as well as digital literacy and internet usage behaviour. The relationships were analyzed using correlation and multiple regression analyses. **Results:** Significant predictors for self-protective behaviour were found to be gender, age, well-being, being vaccinated, being able to work from home since the beginning of the pandemic, knowing people in the immediate social environment that have been infected with Covid-19, assessing the strictness of the measures and performing the unwanted behaviour of consuming more alcohol and avoiding going to the doctor.

Conclusion: The findings supported that the adherence to governmental recommended self-protective behaviors is predicted by socio-demographic factors, psychological characteristics, the perceived severity and susceptibility of contracting Covid-19, as well as, the perceived barriers and benefits of performing the certain behaviour. In order to increase the adherence and thus reduce the negative impact for future outbreaks, it is recommended to focus on the least adherent groups.

Keywords: Covid-19, pandemic, self-protective behaviour, adherence, socio-demographic characteristics, UK

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Introduction

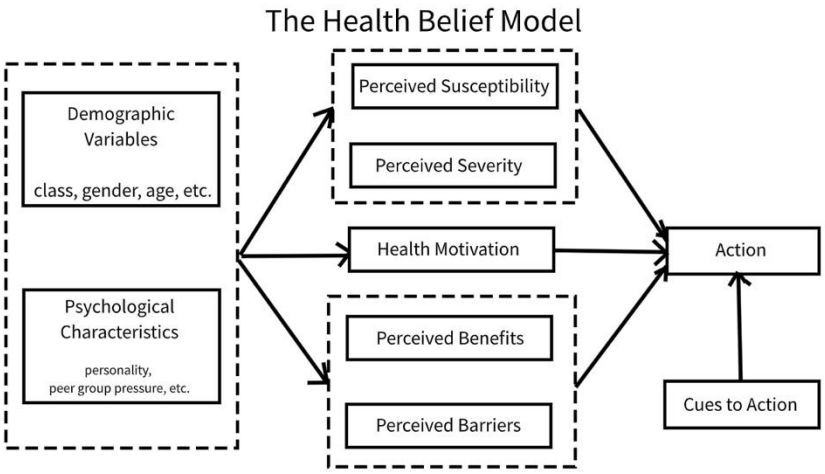
The Coronavirus disease (Covid-19) has been declared a public health emergency of international concern since January 31th 2020 (Sohrabi et al., 2020). Since this, approximately 130,000,000 people have been infected with the disease worldwide and more than 2,870,000 people have died in relation to the virus (Worldometers, 2021). The United Kingdom (UK) was severely impacted with one of the highest death rates in relation to Corona infections in Europe (Stewart, 2021). Up to the first of April 2021, 4,345,788 cases were recorded with a total of 149,168 deaths (Government UK, 2021).

In response to the rapidly rising cases and fatalities, lockdowns, as well as, restrictions for behaviours, including wearing a mask, meeting only a limited number of people or not being able to travel, were imposed by the government at various stages in the pandemic (Government UK, 2021). The effectiveness of these measures depends on the adherence of the population. Nonetheless, non-adherence has been a frequently occurring problem that requires further investigation (Pollak et al., 2020). Thus, it is important to predict the adherence of the total population to the measures induced by the government.

The importance of predicting preventive behaviours is not new to society. As a result of the wide spreading of tuberculosis in the 1950s and the question of why people were not open to participating in programs by the government to prevent the disease, e.g. being vaccinated or proactively screened to detect an infection, led to the development of the Health Belief Model (Rosenstock, 1974). The model (Figure 1) proposes that a person's health-related behaviour depends on several determinants. Firstly, demographic characteristics, including, for example, age, gender, ethnicity or the social-economic status (SES) were found to be a first predictor, alongside, psychological characteristics of the individual. Additionally to that, it was assumed that behaviour depends on the persons' perception of four critical areas, namely the perceived severity of the disease, the perceived susceptibility of getting ill, as well as, the benefits and barriers of taking preventive actions (Rosenstock, 1974).

Figure 1

Schematic representation of the Health Belief Model



Regarding the Covid-19 pandemic, this model can also be applied and used as a basis for developing predictive interventions. Concerning the first part of the model, namely socio-demographic and psychological factors, research has already detected differences in the level of adherence to Covid-19 measures. Higher income, being female, and being below the age of 56 generally seemed to be predictive for self-protective behaviour, such as wearing a face mask (Papageorge et al., 2021). However, different studies revealed contrasting outcomes on which characteristics exactly influence the adherence of self-protective behaviour and thus further research is needed on this topic (Nivette et al., 2021; Shevlin, 2020).

Additionally, as a consequence of the uncertainties about the possibly life-threatening infection, as well as the imposed measures, previously conducted research has shown that the mental health of many people is deteriorating (Benke, Autenrieth, Asselmann, & Pané-Farré, 2020). This includes increased rates of depression, anxiety, psychological stress and loneliness (Xiong et al., 2020). Socio-demographic characteristics were found to be predictive for worsened mental health, as for example, women tend to show higher levels of anxiety (McElroy, 2020). In the context of the pandemic situation, it is of interest whether these differences are predicting self-protective behaviours. Research, conducted so far, is conflicting in their assumption whether psychological symptoms are related to later adherence or not, and thus further investigation is needed (Wright, Steptoe & Fancourt, 2021; Ebrahimi, Hoffart & Johnson, 2021).

The second part of the Health Belief Model covers aspects of perceived susceptibility and severity. Following the model, it is suggested that people who perceive themselves as more

vulnerable to the disease due to higher chances of experiencing it and the belief about how seriously ill they will become, are more adherent to self-protective behaviours (Champion & Skinner, 2008). In the case of Covid-19, factors that could be influential are, for example, the perceived ease to self-isolate, either by living alone or being able to work from home or having a chronic condition that puts the person at higher risk. In the existing literature about this topic, it was, however, found that the perceived susceptibility was a predictor for non-adherence and only the perceived severity due to engaging in several behavioural risk factors predicted adherence (Hills & Eraso, 2021; Mendoza-Jiménez et al., 2021). This makes it an interesting topic for further investigation to determine how strongly these factors reinforce behaviour.

Lastly, the aspects of perceived benefits and barriers of engaging in self-protective behaviour need further consideration. The current technological progression or respectively the adaptation to the circumstances of the pandemic is marked by the usage of the internet. Internet traffic increased by almost 20% during the pandemic (Feldmann et al., 2020) as almost all activities took place online, including, for example, working or learning from home, shopping online or communicating with the social surrounding. Therefore, the availability of internet and necessary devices (e.g. laptop, smartphone), as well as the usage behaviour and how individuals perceive their level of self-efficacy in this field could be another influential predictor for adherence or non-adherence. Regarding the Health Belief Model, these factors can be seen as perceived barriers if people are not aware of how to properly use the internet. In the UK, 96% of people have access to the internet (Prescott, 2020). However, having the available resources does not necessarily mean that the provided information is of high quality, scientifically proven and reliable, as there is a flood of misinformation and fake news to be found as well (Hernández-García & Giménez-Júlvez, 2020; Duplaga, 2020). Notably, usage behaviour, demographics and fake news are interrelated as well, as for example, social media usage increased during the pandemic, 40% of the shared links via social networks contained fake news and social media was generally used more frequently by lower socio-economic backgrounds (Waszak, Kasprzycka-Waszak, & Kubanek, 2018; Feldscher, 2018). Hence, it can also be said that the internet usage and internet activities are different across different demographic groups, either as self-efficacy of performing certain activities is lower than for others or the level of trust in the provided information differs (Johnson, 2021; Office of Policy Development and Research, 2016). Nonetheless, regardless of the correctness, the information provided by any of the available sources have the capacity to strongly influence users. As big masses are reached via these sources of information, it could lead to problematic reactions in the adherence of self-

protective behaviour in many individuals and thus further insights are highly important to be gained in order to understand these behaviours in more detail.

Additional barriers in adhering to the governmental recommendations might include the financial stability during the pandemic. In the UK almost 700.000 people have lost their jobs within the last year and more than 11 million jobs have been furloughed because of Covid-19, which are approximately one-third of the employed people within the country (Office for National Statistics, 2021; Clark, 2021). This makes the pandemic not only a health but also a job crisis. Potentially, these circumstances could strongly impact the willingness to adhere to governmental recommendations.

Present study

The aim of the present study was to investigate which factors are associated with adherence to self-protective behaviours during the Covid-19 pandemic in the UK. Based on the Health Belief Model, several research questions were proposed that are going to be tested in the following study. These questions are defined as the following:

R1: Are preventive behaviours related to the determinants as described in the Health Belief Model, namely socio-demographic characteristics, psychological characteristics, perceived severity and susceptibility and perceived barriers and benefits?
R2: How well can preventive behaviour be predicted by these variables and what are the main predictors in a regression?

Methods

Study Design

For this present study, a cross-sectional survey design was employed, by means of an online questionnaire. Here, socio-demographic and psychological factors, the perceived severity and susceptibility, as well as, perceived risks and benefits were considered as the independent variable, whereby adherence to Corona measures by engaging in self-protective behaviours was defined as dependent variable.

Participants

The study was conducted in July 2021. At the time of data collection, the UK already went through three national lockdowns but started to ease the measures from March 2021 onwards (Institute for Government, 2021). However, since the beginning of June 2021, the number of

cases rose again, as a consequence of the highly transmissible delta variant (also known as B.1.617.2) (Burki, 2021).

Inclusion criteria for the participants were to be above the age of 18 and living in the United Kingdom. In total, 1000 participants were planned to be included from different groups, based on the distribution of people in the UK. Therefore, quotas were established that determine the size of the groups (see Table 1). The participants were recruited in form of a convenience sampling method by means of the data collection agency MRFGR.

Table 1

Initial number of participants per quota for recruiting data

Quota	Number of participants
18-24 female	56
18-24 male	54
25-39 female	126
25-39 male	124
40-59 female	179
40-59 male	171
60 + female	148
60 + male	142
North East	40
North West	110
Yorkshire and the Humbers	80
East of Englands	100
East midlands	70
West midlands	90
London	130
South East	140
South West	80
Wales	50
Scotland	80
Northern Ireland	30
Higher SES*	500
Lower SES*	500

*SES (Social economic status) determined by questions 22b, asking about the job position of the participants. Higher or intermediate managerial roles, administrative or professional, as well as supervisory or clerical and junior managerial roles were decisive for a higher SES. Skilled or semi-skilled working class, skilled or unskilled manual workers, as well as non-working state pensioners, casual and lowest grade workers and unemployed with state benefits only were categorized as lower SES.

Materials

Self-reported measures were collected through the survey tool platform Qualtrics. To cover the different determinants as described in the Health Belief Model, several topics and scales were included (Table 2). The questionnaire was mainly based on nine different, already validated questionnaires that will be described in greater detail in the following part. A detailed overview of all questions that were included in this study and where they were retrieved from, can be found in the Appendix (Table A1).

Table 2

Overview of variables or questionnaires of interest included in the final questionnaire categorized into the four sections of the Health Belief Model.

Demographic variables	**Psychological characteristics**	**Perceived Susceptibility and Severity**	**Perceived Benefits and Barriers**
Age	Scarcity scale	Being vaccinated	Living situation
Gender	PHQ-4	Probability of getting infected	Housing situation (Bedrooms, Bathrooms, Garden, Car)
Nationality	CFCS	High risk of Covid-19 at work	NEWS
Ethnicity	EQLS – well-being	Being able to work from home	Perceived ease of self-isolating
SES	EQLS – feeling	Having been infected with Covid	Financial situation over past year
Job position	EQLS – optimism	Having a disability	Losing job or having lost the job
Education	Covid-19 QoL	Having a chronic condition	Health literacy
Income		Severity of contracting	Digital literacy
		BMI	Assessing measures
		General health status	Internet competency
		Knowing people that have been infected with Covid-19	Knowledge level on spread and self-protection
		Knowing someone who died due to Covid-19	Use and trust in sources of information
		Unwanted behaviour	

Participant information sheet and informed consent

At the beginning of the questionnaire, the participant information sheet is included. With this, the participants are informed about the study's content and data collection procedure. This is followed by the informed consent form, with which the participant confirms that he or she is participating voluntarily, understands for what the data is used and how it is handled and that the survey can be stopped at any time.

World Health Organization (WHO) - Survey tool and guidance: rapid, simple, flexible behavioural insights on COVID-19

The WHO- *Survey tool and guidance: rapid, simple, flexible behaviour insights on Covid-19* is a guidance to collect behavioural insights related to Covid-19 and is the most frequently applied tool in the questionnaire of this present study. The survey tool is evidence-informed, flexible in adjusting to changing situations and follows high ethical standards (WHO, 2020). In total, 21 sets of variables are surveyed in the original survey tool, out of which 8 were selected for this study and will be further described in the following:

Sociodemographics

Nine questions were included in the questionnaire to measure *demographic* information, covering aspects of age, gender, ethnicity, place of living, household size and basic information about the private financial situation.

Covid-19 and personal experience

Secondly, 6 questions relating to *Covid-19 and personal experience* are asked. In this section, the respondents were asked to indicate their own experiences with Covid-19 infections either by having experienced it oneself or knowing someone in the immediate social surrounding that got ill or died. Again, this is important information to gather more precise insights into the findings.

Probability and severity

The variable of *Probability and Severity* of a Covid-19 infection is surveyed with two questions asking about the self-assessed probability, susceptibility and severity of contracting Covid-19. These questions follow the psychological construct of risk-perception and its validated items are adapted from Brewer et al. (2007). Their study revealed that risk probability, susceptibility and severity is a significant predictor for health behaviour.

Prevention own behaviour

This variable is about the frequency of engaging in self-protective behaviours to avoid an infection with Covid-19. The covered behaviours include avoiding touching the face with unwashed hands, using disinfectants to clean hands when soap and water are not available, avoiding social gatherings, wearing a mask in public, ensuring physical distancing in public, disinfecting surfaces and carrying disinfectant to clean the hands. The response choices varied from "not at all" (1) to "very much so"(5) and were summed up to give insights into the psychological construct of prevention behaviour. The used items were adapted from SteelFisher et al., (2009) and allow to compare knowledge and resilience with recommended behaviour.

Preparedness and perceived self-efficacy

The variable of *preparedness and perceived self-efficacy* is included with two questions asking about self-protection and avoidance ability related to Covid-19. Thus, the items are based on two psychological constructs, namely the one of preparedness (Bandura, 2006) and perceived self-efficacy (Renner & Schwarzer, 2005).

Trust in sources of information

The following variable is labelled *Trust in sources of information* and covers 10 common sources of information (e.g. television, newspaper, WHO) which could be evaluated on a 5-point Likert scale based on the amount of trust given for the listed sources. Respectively, the psychological construct of trust is applied and the items were based on the theories of Schweitzer et al., (2006) and Pearson & Raeke (2000).

Use of sources of information

Related to the previous variable, the variable *Use of sources of information* displayed the same sources of information as before and asked the respondents about their frequency of using these sources. Again a 5-point Likert scale was applied ranging from "Never" to "Very often". These items were not based on a psychological construct but nonetheless, allow for comparing trust and use of information sources as well as for identifying widespread sources.

Unwanted behaviour

The last variable, which is included from the WHO-questionnaire is referred to as *unwanted behaviour*. This variable is tested with one question, including 7 statements of unwanted behaviour (e.g. exercising less, drinking more alcohol, smoking more than before,

behaving aggressively) that could be evaluated with yes and no. For the analysis, conducting a regression is recommended.

Covid-19 Impact on Quality-of-life scale

The Covid-19 Impact on Quality-of-life scale is a six-item self-report questionnaire designed as a tool to assess the impact of the Covid-19 pandemic on the quality of life (Repišti et al., 2020). The questions cover aspects of feelings about the quality of life in general, mental and physical health deteriorations and aspects of anticipatory anxiety due to the risk of getting infected (e.g. "*Due to the spread of the Coronavirus, I feel more tense than before").* The items are evaluated on a 5-point Likert scale, with the response options ranging from "completely disagree" (1) to "completely agree" (5). To score the questionnaire, it is recommended to sum the scores of all items, dividing this by the number of items (6) to receive the average. The higher the score, the greater the impact on quality of life and related facets. The questionnaire is a reliable and valid tool to assess QoL and shows high internal consistency with a Cronbach's alpha value $\alpha = .885$ for the non-clinical sample and a value of $\alpha=.856$ for the clinical sample (Repišti et al., 2020). The intercorrelations of the scale were found to be of moderate to high magnitude, positive and statistically significant ($p<.001$).

Neighbourhood Environment Walkability scale

Originally, the full Neighbourhood Environment Walkability Scale (NEWS) (Saelens & Sallis, 2002) consists of nine subscales and 68 items. However, for the purpose of this study only three questions were chosen out of the neighbourhood satisfaction facet to gain a brief overview. The questions covered the easiness of walking, cycling or performing other physical activities within the neighbourhood and could be evaluated on 5-point Likert scale (1-5). For scoring the items, the means are calculated. In the study of Saelens & Sallis (2002) the psychometric properties were found to be acceptable, with a subscale test-retest reliability of .80. Even though most of the items were excluded for the purpose of this study, the included items of the NEWS are still found to be reliable with a Cronbach's alpha value of .858.

European Quality of Life scale (EQLS)

Furthermore, the 4th edition of the EQLS, which was developed by the European Foundation for the Improvement of Living and Working Conditions in 2016 was included in the questionnaire. The EQLS is a representative tool to capture quality of life in multiple dimensions and covers all EU member states (Eurofound, 2017). It includes questions to

encompass information about socioeconomic backgrounds, resources, living conditions, unpaid work, social ties and use of service, including indicators on subjective well-being. Thus, the EQLS allows to examine many aspects of individual characteristics and experiences and how individuals feel about those circumstances and their lives in general (Maguire et al., 2019). Originally, the survey contains 262 items, however, only 15 items were chosen for this survey, covering aspects of health (e.g. *Do you have a chronic condition or registered disability?*), work and income (e.g. *How easy is it for your household to make ends meet?*) and general well-being (e.g. *I feel more tense than before*). The questions could be evaluated on a 5-point Likert scale.

European Working Conditions Survey (EWCS)

The 6th European Working Conditions Surveys (EWCS) (Eurofound, 2016) was also included within the questionnaire. Different from the EQLS, the EWCS focusses on concrete experiences of workers, including topics of risk factors, employment conditions, financial security or well-being. For this current study, two questions from the EWCS were included. The first one is asking about five different situations in the last two weeks and how often they were experienced, e.g. *how often have you felt too tired after work to do some of the household jobs which need to be done?).* The second question follows the first by asking about how often the respondents worked in their free time to meet work demands. Both questions were to be assessed on a 5-point Likert scale.

Consideration of Future Consequence Scale

To gain further insights into the individual characteristics of personal behaviour, the Consideration of Future Consequence Scale (CFS) was included (Strathman et al., 1994). The scale consists of 12 questions that are to be evaluated on a 5 point Likert scale ranging from "extremely uncharacteristic"(1) to "extremely characteristic" (5). The questions aim at detecting differences in the extent to which future outcomes are considered for performing present behaviours. The higher the score on the CFS scale, the greater the consideration of future consequences. In order to calculate this score, items 3, 4, 5, 9, 10, 11, 12 should be reversed. Additionally, the psychometric properties for this questionnaire were found to be acceptable. Strathman et al. (1994) computed Cronbach's alpha ranging from .80 to .86 and thus the scale shows good reliability.

Scarcity scale

Additionally, the scarcity scale was included within the present study (..). The scale based on the theoretical work by Mullainathan & Shafir (2014) consists of 4 subscales, namely "perceived scarcity", "tunnelling", "bandwidth" and "slack" with four questions each (Tan & Sniehotta, in prep). One example question is: "*Focussing on one task leads to me disengage with other tasks".* The scale could be assessed on a 5-point Likert scale ranging from "totally disagree" to "totally agree". To calculate the scarcity the items are summed up and the mean is determined. In this study, the scarcity scale revealed good internal consistency with a Cronbach's alpha value of .832.

Digital literacy scale

In order to assess the usage behaviour of technical devices and the internet, the digital literacy scale was included as a basis (van der Vaart, Drossaert, 2017). This scale being taken as a reference, questions about the means of internet access were included, e.g. mobile phone or computer as available devices, as well as, the confidence of performing certain internet activities and generally feeling safe using the internet. The to be observed internet activities included amongst other things to be able to use online baking, ordering food, clothes or medical supplies, working from home or spending time online with family and friends. The activities were adjusted to the Covid-19 pandemic and could be assessed on a 5-point Likert scale.

PHQ-4

The four-item Patient Health Questionnaire-4 (PHQ-4) (Kroenke et al., 2009) is a brief self-report questionnaire that consists of the two-item depression scale (PHQ-2) and the two-item anxiety scale (GAD-2). The questionnaire asks about how often the respondents were bothered by certain problems within the last 2 weeks. The response options are "not at all"(0), "several days" (1), "more than half the days" (2), and "nearly every day" (3) and are scored respectively, with total scores ranging from 0-12. For both, the PHQ-2 and the GAD-2 scores of ≥3 were suggested as cut-off points between the normal range and probable cases of depression or anxiety. The psychometric properties for the PHQ-4 were found to be acceptable with Cronbach's alpha values for the internal consistency of $\alpha = 0.78$ (PHQ-4), $\alpha = 0.75$ (PHQ-2) and $\alpha = 0.82$ (GAD.2) (Löwe, et al., 2010). Additionally, the item-intercorrelation for between and within subscales was also adequate, with values ranging from $r = 0.44$ to $r = 0.64$.

Procedure

The study was approved by the Ethical Committee of the Faculty of Behavioral, Management and Social Sciences of the University of Twente, Netherlands and received additional approval by the Newcastle University, UK.

The participants received the Qualtrics link to access the questionnaire via email. Hence, a technical device with access to the internet, e.g. smartphone or laptop was needed. Once the participants followed the link to Qualtrics, they were informed about the study and their rights and had to agree to the consent form by ticking a box. Afterwards, the different sections of the questionnaire were displayed, following the order of demographic characteristics, housing situation, work and employment, health and covid-19 experiences, health literacy and Covid-19 knowledge, internet usage, psychological characteristics, and outcome variables. If certain questions were not applicable for specific participants, they were skipped automatically in the survey flow. Finally, the participants were redirected to the MRFGR website and thanked for their cooperation. The survey ended when the quotas were fulfilled. If a quota was already fulfilled, the participation stopped automatically.

Data analysis

The data analysis was conducted using IBM SPSS statistics version 27. To represent participant characteristics and to give an overview of the different variables, descriptive statistics were calculated. Cronbach's alpha was computed to test the internal consistency reliability for scales that were adjusted for the purpose of this questionnaire and thus had not been validated by other researchers. Additionally, a factor analysis was conducted for questions on respondents' use of and trust in several sources of information to reduce the individual items into fewer dimensions.

In order to answer the research questions, the total scores of all variables were determined under the consideration of reverse scoring. Correlation analyses were conducted, using Pearson correlation to describe the relationship between the different independent variables of socio-demographic and economic characteristics and the dependent variable of "self-protective behaviour" but also between the independent variables to investigate differences between groups. Lastly, a multiple linear regression analysis was conducted, allowing to assess the strength of the relationship between dependent variables and the predictive variables.

Results

In total, 1001 participants completed the questionnaire with no participant being removed. The average time to answer the questionnaire was 14,9 minutes (SD = 15,09).

Table 3 gives an overview of the descriptive statistics. Overall, the sample consisted of a comparable number of women (51,9%) and men (47,7%) with a mean (SD) age of 46 (16,24). Descriptive statistics of the dependent variable of self-protective behaviour revealed that all measures were on average frequently applied by the sample. Washing hands, avoiding social gatherings, wearing a face mask in public, and maintaining physical distance were found to be the most often applied self-protective behaviours.

Researching the health status of the sample revealed that 85% of the sample received at least the first vaccination, while approximately, 13% were previously infected with Covid-19. Additionally, the average BMI revealed a mean score of 26,9 (SD=6, 62) which is considered overweight (U.S. Department of Health and Human Services, n.d.).

The majority of the sample indicated to live together with children under 18 (32,2%), having a small private garden and a car. In total, 27% of the participants reported to have either lost their job permanently or temporarily or having been furloughed over the course of the pandemic. Additionally, more people reported it to be unlikely to lose the job within the next 3 months (31,5%) than people reporting it to be rather likely (19,2%).

Overall, the sample showed to be competent using the internet and having averagely high levels of knowledge on health literacy and the spread of Covid-19. The sample showed to score slightly below the average on the PHQ-4- and slightly above the average on the Scarcity scale, CFCS, Covid-19 QoL scale and the included EQLS scales.

Table 3
Descriptive statistics for all key variables

	N	Minimum	Maximum	Mean	Standard deviation
Age in years	1000	18.00	76.00	46.429	16.246
Gender (dich. female)	1001	.00	1.00	.5195	.499
Nationality	1001	1.00	4.00	1.283	.713
Ethnicity					
White	1001	.00	1.00	.888	.315
Mixed	1001	.00	1.00	.022	.146
Asian	1001	.00	1.00	.066	.250
African / Caribbean	1001	.00	1.00	.016	.125
Arab	1001	.00	1.00	.002	.044
Highest level of education	993	1.00	6.00	3.14	1.142
SES	1000	.00	1.00	.506	.500
Job position	1000	1.00	8.00	3.07	2.411
Employee	1001	.00	1.00	.515	.500
Self-employed with employees	1001	.00	1.00	.028	.164
Self-employed without empl.	1001	.00	1.00	.056	.231
Unemployed	1001	.00	1.00	.070	.256
Unable to work	1001	.00	1.00	.047	.211
Retired	1001	.00	1.00	.184	.388
Full-time homemaker	1001	.00	1.00	.066	.250
Student	1001	.00	1.00	.029	.167
Income	1001	1.00	12,00	3.311	2.576
Vaccination	1000	.00	2,00	1.501	.721
Own probability of getting Covid-19?	1001	1.00	5.00	2.73	.993
Severity of contracting Covid-19	1001	1.00	5.00	2.79	1.142
High risk for Covid-19 at work	630	1.00	2.00	1.67	.469
Working from home	631	1.00	3.00	2.02	.882
Knowing how to protect oneself from Covid-19.	999	1.00	3.00	2.51	.548
Chronic condition	1000	.00	1.00	.204	.403
Disability	999	.00	1.00	.102	.302
BMI	997	13,15	64.08	26.91	6.624
General health status	1001	1.00	5.00	2.92	.978
Infected with Covid-19?	1001	1.00	2.00	1.87	.337
Knowing people infected with Covid-19	1001	1.00	2.00	1.53	.499
Knowing someone who died from Covid-19	1001	1.00	2.00	1.72	.450
Living situation					

	N	Minimum	Maximum	Mean	Standard deviation
Living alone	1001	.00	1.00	.235	.424
Living with children (<18)	1001	.00	1.00	.321	.467
Living together with people from Covid-19 risk group	1001	.00	1.00	.187	.390
Bathrooms	999	.00	5.00	1.506	.744
Bedrooms	998	.00	6.00	2.769	1.021
Do you have a garden?	1000	1.00	4.00	2.97	.921
NEWS	1001	1.00	5.00	3.627	.931
Car	1000	.00	1.00	.799	.400
Perceived ease to self-isolate in home	1001	1.00	5.00	3.43	1.247
Lost job during pandemic	1001	1.00	4.00	3.39	1.088
Probability of losing your job in the next 3 months?	602	1.00	5.00	3.55	1.239
Easiness of making ends meet	1001	1.00	5.00	2.33	.939
Assessing corona measures	1001	1.00	3.00	2.22	.649
Health Literacy WHO	1001	.00	5,00	2.091	.778
Finding information	1000	1.00	5.00	1.94	.871
Understanding information	1001	1.00	5.00	2.00	.927
Judging information	1001	1.00	5.00	2.45	1.012
Follow recommendations on how to protect yourself	1001	1.00	5.00	1.98	.947
Follow recommendations about when to stay at home from work/school	1001	1.00	5.00	2.04	.974
Follow recommendations about when to engage in social activities	1001	1.00	5.00	2.14	1.030
Digital literacy					
Mobile Phone	1001	.00	1.00	.855	.352
Laptop	1001	.00	1.00	.688	.463
Tablet	1001	.00	1.00	.541	.498
Computer at home	1001	.00	1.00	.368	.482
Computer at work	1001	.00	1.00	.186	.389
Internet competency	1001	1.00	5.00	3.893	.709
Knoweldge level	1000	1.00	5.00	3.840	.805
Use of sources	1001	1.00	5.00	3.083	.998
Scarcity scale	1001	1.00	5.00	3.211	.559
CFCS	1001	1.00	5.00	3.061	.482
PHQ_4	1001	1.00	4.00	2.120	.872

	N	Minimum	Maximum	Mean	Standard deviation
Covid19-QoL	1001	1.00	5.00	2.997	.882
EQLS - optimism	1001	1.00	5.00	3.167	.612
EQLS - Wellbeing	1001	1.00	6.00	3.438	1.116
EQLS - feeling	1000	1.00	6.00	2.992	1.359
Unwanted Behaviour	1001	.00	1,00	.294	.255
Exercised less	999	1.00	2.00	1.59	.492
Drank more alcohol	999	1.00	2.00	1.72	.450
Ate more unhealthy food	1000	1.00	2.00	1.55	.497
Smoked more	994	1.00	2.00	1.81	.389
Postponed vaccination	996	1.00	2.00	1.79	.408
Avoided going to the doctor for a non Covid-19-related problem	998	1.00	2.00	1.62	.486
Behaved aggressively towards others	1000	1.00	2.00	1.85	.357
Self-protective behaviour	989	13,00	65,00	49.75	9.509
Avoid touching face with unwashed hands	1001	1.00	5.00	3.80	1.026
Use disinfectants to clean hands when soap and water were not available	1000	1.00	5.00	3.85	1.180
Avoid social gatherings	1000	1.00	5.00	4.19	1.022
Wear a mask in public	999	1.00	5.00	4.35	.979
Ensure physical distancing in public	998	1.00	5.00	4.31	.913
Disinfect surfaces	1000	1.00	5.00	3.95	1.055
Carry disinfectant to clean your hands	1000	1.00	5.00	3.69	1.340
Doing your grocery shopping at off-peak hours and/or less often.	1000	1.00	5.00	3.95	1.114
Maintaining at least 1.5 meter distance	1001	1.00	5.00	4.17	.926
Stay at home from work when healthy	999	1.00	5.00	3.50	1.544
Staying home when sick	1000	1.00	5.00	3.83	1.387

Research question 1: Are preventive behaviours related to the determinants as described in the Health Belief Model, namely socio-demographic characteristics, psychological characteristics, perceived severity and susceptibility and perceived barriers and benefits?

Investigating the first research question, several significant associations were found for variables from all categories of the Health Belief Model (Table 4). Regarding the first part of the model namely the socio-demographic characteristics, a significant, association between gender and self-protective behaviour (r=.166, p<.001), as well as, between the variables of age and self-protective behaviour (r=.172, p<.001) was found. Focusing on the separate age groups, weak, negative associations were found for people between 18-40, while individuals above the age of 60 showed to have a weak, positive association towards the desired behaviour. No significant associations were found for nationality, ethnicity, SES, income and self-protective behaviour. Regarding the variable of job position, one weak positive correlation was found for retired individuals (r=.101, p=.002), while one weak negative correlation was found for individuals who are self-employed with employees (r=-.080, p=.012).

Secondly, the psychological and outcome measures were investigated. Pearson's correlation revealed that there is a weak negative correlation between scarcity and self-protective behaviour (r=-.104, p<.001) but weak positive correlations between self-protective behaviour and the consideration of future consequences scale (r=.146, p<.001), the optimism scale (r=.134, p<.001), as well as, the well-being scale (r=.086, .p=.007). Additionally, significant, weak, negative correlations were found for the unwanted behaviour of drinking more alcohol (r=-.066, p=.038), postponing vaccination (r=-.100, p=.002) and behaving more aggressively (r=.078, p=.014). A significant, weak positive association was found for self-protective behaviour and the unwanted behaviour of avoiding going to the doctor (r=.096, p=.003).

Investigating the third part of the model, namely whether the perceived susceptibility and severity of getting Covid-19 is impacting self-protective behaviour, several significant associations could be found between self-protective behaviours and the variables of interest. Having received the Covid-19 vaccination (r=.151, p<.001), assessing the own probability (r=.137, p<.001) and severity of getting infected (r=.155, p<.001), being able to work from home (r=.118, p=.003), as well as the general health status (r=.070, p=.027) and BMI (r=.090, p=.005), were weakly positively correlated with self-protective behaviours. A weak negative association was found for the self-protective behaviour and having been infected with Covid-19 (r=-.106, p<.001).

The fourth part of the model covers aspects of perceived barriers and benefits of adhering to self-protective behaviours. Several aspects were explored, beginning with aspects of perceived easiness to self-isolate, including the living and housing situation. No significant association could be found between the living situation and self-protective behaviour. Weak

positive associations on the other hand were found between self-protective behaviours and for the variables of perceived easiness to self-isolate (r=.161, p<.001), as well as, for having more bedrooms (r=.078, p<.001), a larger garden (r=.103. p<.001), and a pleasant neighbourhood, as indicated by the results of the Neighbourhood Walkability Scale (r=.194, p<.001).

Furthermore, the financial stability was assessed. Weak, significant, positive associations were detected for not having lost the job during the pandemic (r=.093, r=.003), having a low probability of losing the job within the next 3 months (r=.161, p<.001), and having a worsened financial situation over the past year (r=.127, p<.001).

Lastly, aspects of health and digital literacy, internet usage behaviour and knowledge level on how to protect oneself from Covid-19 were investigated. Conducting correlation analyses revealed weak significant associations between self-protective behaviour and assessing Covid-19 measures, (r=.269, p<.001), the scoring for the overall health literacy score (r=-.371, p<.001), as well as for all subcategories, the internet competency (r=.296, p<.001) the knowledge level of how to protect oneself (r=.355, p<.001,) as well as, the knowledge level on how to prevent the spread of the virus (r=.345, p<.001). Additionally, significant associations were found for having certain available technical devices and making use of certain internet sources. For all tested sources, significant weak, positive associations were found, except for the sources of social media and celebrities.

Table 4

Excerpt from the full correlation matrix. Correlations between the variable of self-protective behaviour and all other variables of interest. Full correlation matrix can be found in the Appendix (Table A2).

Independent variables	Self-protective behaviour	P-value
Gender (dich. female)	**.166**	**<.001**
Age	**.172**	**<.001**
18-24	**-.069**	**.029**
25-39	**-.119**	**<.001**
40-60	.011	.733
60 +	**.150**	**<.001**
Nationality		
England	.000	.998
Scotland	-.020	.524
Wales	.035	.271
Northern Ireland	-.014	.662

Independent variables	Self-protective behaviour	P-value
Ethnicity		
White	-.011	.719
Mixed	-.060	.057
Asian	.067	.036
African /carribean	-.017	.594
Arab	-.041	.193
SES	.029	.366
Income	.022	.497
Education		
No formal qualification	.026	.419
GSCE/O-level	-.108	.568
A-level	**-.082**	**.010**
Undergraduate Degree	**.067**	**.035**
Postgraduate degree	.034	.284
Other	-.018	.583
Job position		
Employee	-.044	.163
Self-employed with employees	**-.080**	**.012**
Self-employed without employees	-.042	.186
Unemployed	-.049	.121
Unable to work due to long-term illness	.014	.654
Retired	**.101**	**.002**
Full-time homemaker	.040	.210
Student	.029	.356
Living Situation		
Living alone	-.019	.561
Living with children under 18	0.05	.865
Living together with people from Covid-19 risk group	.016	.606
Housing situation		
Bedrooms (Mean)	**.078**	**.014**
Bathrooms (Mean)	.051	.111
Garden	**.102**	**.001**
NEWS	**.194**	**<.001**

Independent variables	Self-protective behaviour	P-value
Car	.042	.190
Perceived ease of self-isolating	**.161**	**<.001**
Vaccination	**.151**	**<.001**
Own probability of getting infected	**.137**	**<.001**
High risk at work	-.042	.293
Working from home	**.118**	**.003**
Infected with Covid-19	**-.106**	**<.001**
Disability	.012	.714
Chronic disease	.024	.443
How severe would contracting be	**.155**	**<.001**
BMI	**.090**	**.005**
General health status	**.070**	**.027**
Knowing people infected with Covid	-.060	.061
Knowing someone who died from Covid	-.031	.336
Loosing job during Pandemic	**.093**	**.003**
Permanently	**-.075**	**.019**
Temporarily	-.043	.179
Furloughed	-0.12	.706
No	**.089**	**.005**
Loosing job in next three months	**.161**	**<.001**
Financial situation over past year	**.111**	**<.001**
Assessing measures	**.269**	**<.001**
Health literacy (difficulty)	**-.371**	**<.001**
Finding information	**-.231**	**<.001**
Understanding information	**-.293**	**<.001**
Judging information	**-.237**	**<.001**
Follow recommendations on how to protect oneself	**-.324**	**<.001**
Follow recommendations about staying home	**-.363**	**<.001**
Follow recommendations about social activities	**-.352**	**<.001**
Digital literacy		
Mobile Phone	**.131**	**<.001**
Laptop	**.115**	**<.001**
Tablet	**.068**	**.033**

Independent variables	Self-protective behaviour	P-value
Computer at home	.036	.256
Computer at work	**.064**	**.046**
Internet competency	**.296**	**<.001**
Knowledge level on spread	**.345**	**<.001**
Knowledge on self-protection	**.355**	**<.001**
Use of Sources	**.382**	**<.001**
Television	**. 311**	**<.011**
Newspaper	**.155**	**<.001**
Health workers	**.260**	**<.011**
Social Media	.034	.282
Radio	**.129**	**<.001**
Department of Health and Social care	**.292**	**<.001**
Public Health England	**.320**	**<.001**
Celebrities and Social media	.029	.363
WHO	**.309**	**<.001**
www.gov.uk/coronavirus	**.370**	**<.001**
Scarcity	**-.104**	**.001**
Consideration of future consequences	**.146**	**<.001**
PHQ-4	.017	.590
Covid- 19 Quality of life scale	.009	.755
EQLS - Optimism	**.134**	**<.001**
EQLS - Well-being	**.086**	**.007**
EQLS - Feeling	.003	.919
Unwanted behaviour	-.040	.206
Exercised less	.021	.514
Drank more alcohol	**.066**	**.038**
Ate more unhealthy	-.014	.655
Smoked more	.047	.139
Postponed vaccination	**.100**	**.002**
Avoided going to the doctor	**-.096**	**.003**
Behaved more aggressively	**.078**	**.014**

Note. variables of job position, losing the job, housing sitatution, and gender are dichtomoised (1= specific variable, 0= all other variables)

Research question 2: How well can preventive behaviour be predicted by these variables and what are the main predictors in a regression?

To approach the second research question, a multiple linear regression was conducted to evaluate the prediction of the dependent variable of self-protective behaviour from all remaining independent variables that showed at least a bivariate correlation (Table 5). A significant regression equation was found (F=6,464, p= <.001), with an adjusted R^2 of .379.

Controlling for demographic factors, gender and age were found to be significant predictors of self-protective behaviour. Similarly, covering aspects of psychological measurements, well-being was found to be a significant predictor. Concerning factors of perceived susceptibility and severity, being vaccinated, being able to work from home since the beginning of the pandemic, knowing people in the immediate social environment that have been infected with Covid-19, assessing the strictness of the measures and performing the unwanted behaviour of consuming more alcohol and avoiding going to the doctor were found to be significant predictors. Lastly, some variables that were assigned to the category of perceived barriers and benefits showed significant predictions. These variables are knowing how to protect oneself from Covid-19, the probability of losing the job within the next three months, the easiness of making ends meet, the health literacy, the knowledge level on the spread of the virus and the trust and use of sources.

Table 5

Multiple linear regression analyses with self-protective behaviour as dependent variable and all other variables as independent variable that have shown bivariate correlations.

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std.-Error	Beta	T	Sig.
(Constant)	17.787	9.544		1.864	.063
Age in years	.072	.034	.104	2.117	**.035**
Gender (dich. female)	2.568	.709	.136	3.621	**.000**
Nationality	.678	.477	.050	1.421	.156
Ethnicity					
White	-1.215	7,732	-.040	-.157	.875
Mixed	-1.818	8,001	-.031	-.227	.820
Asian	2.411	7,854	.059	.307	.759
African / Caribbean	-.417	8,024	-.007	-.052	.959
Arab	-5.434	10,906	-.024	-.498	.619

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std.-Error	Beta	T	Sig.
Highest level of education	-.273	,340	-.031	-.802	.423
SES	-.280	,823	-.014	-.340	.734
Job position	-.762	,595	-.049	-1.280	.201
Income	-.057	,146	-.016	-.389	.697
Vaccination	1.066	,531	.081	2.010	**.045**
Own probability of getting Covid-19?	.278	,370	.029	.751	.453
Severity of contracting Covid-19	.420	,353	.048	1.190	.235
High risk for Covid-19 at work	-.345	,810	-.017	-.426	.671
Working from home	-1.068	,454	-.101	-2.352	**.019**
Knowing how to protect oneself from Covid-19	2.193	,673	.131	3.259	**.001**
Chronic condition	-1.949	1,107	-.067	-1.761	.079
Disability	.813	1,476	.020	.551	.582
BMI	-.008	,054	-.006	-.156	.876
General health status	.305	,417	.031	.732	.465
Infected with Covid-19?	1.189	1,059	.046	1.122	.262
Knowing people infected with Covid	-1.483	,734	-.079	-2.021	**.044**
Knowing someone who died from Covid	.542	,784	.026	.691	.490
Living situation					
Living alone	1.381	1.220	.058	1.132	.258
Living with children (< 18)	1.095	.884	.057	1.239	.216
Living together with people from Covid-19 risk group	.438	1.128	.016	.388	.698
Bathrooms	.875	.534	.072	1.638	.102
Bedrooms	-.084	.465	-.009	-.181	.856
Do you have a garden?	.069	.426	.007	.162	.871
NEWS	.470	.446	.048	1.056	.292
Car	-1.166	1.014	-.044	-1.151	.250
Perceived ease to self-isolate in home	-.088	.319	-.011	-.275	.783
Lost job during pandemic	-.625	.378	-.074	-1.655	.099
Probability of losing your job in the next 3 months?	.736	.370	.096	1.991	**.047**
Easiness of making ends meet	.870	.437	.080	1.990	**.047**
Assessing corona measures	1.506	.569	.104	2.646	**.008**

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std.-Error	Beta	T	Sig.
Health Literacy WHO	-2.621	.559	-.208	-4.688	**.000**
Finding information	2.190	1.114	.075	1.967	**.050**
Understanding information	-.038	.766	-.002	-.049	.961
Judging information	.165	.694	.009	.238	.812
Follow recommendations on how to protect yourself	.111	.761	.006	.146	.884
Follow recommendations about when to stay at home	.310	.808	.015	.384	.701
Internet competency	.389	.624	.029	.622	.534
Knowledge level	1.397	.484	.128	2.890	**.004**
Trust and use of sources	1.907	.406	.192	4.697	**.000**
Scarcity scale	-.411	.731	-.025	-.563	.574
CFCS	-.535	.760	-.027	-.704	.482
PHQ-4	1.352	.674	.119	2.004	.046
Covid19-QoL	.207	.567	.019	.365	.715
EQLS - Optimism	.238	.662	.015	.360	.719
EQLS - Wellbeing	.776	.377	.087	2.060	**.040**
EQLS - Feeling	.056	.449	.008	.124	.901
Unwanted behaviour					
Smoked more	.953	.943	.041	1.011	.313
Exercised less	-.208	.747	-.011	-.279	.780
Ate more unhealthy food	-.356	.737	-.019	-.483	.630
Drank more alcohol	-1.572	.765	-.078	-2.055	**.040**
Postponed vaccination	-.726	.868	-.033	-.836	.404
Avoided going to the doctor for a non Covid-19-related problem	1.551	.746	.079	2.079	**.038**
Behaved aggressively towards others	-.026	1.033	-.001	-.025	.980

Discussion

Key findings

The aim of the current study was to investigate which factors are associated with self-protective behaviours during the Covid-19 pandemic in the UK. For this, the Health Belief Model was used as a basis to test whether the components of the model can also be applied to predict adherence to self-protective behaviour during the pandemic. Some significant predictions were

found for the different components of the model (demographic characteristics, psychological characteristics, perceived susceptibility and severity, perceived barriers and benefits).

Demographic characteristics

For the first component of the model, socio-demographic characteristics, significant predictions for self-protective behaviour were found for the variables of gender and age, indicating that women rather comply with self-protective behaviours, as well as, older individuals.

These findings resemble the results from other studies. For example, Galasso et al. (2020) confirm in their study about Covid-19 attitudes and behaviours that large gender differences exist and women tend to have more anxious attitudes towards the pandemic situation and thus also more often engage in self-protective behaviours. Generally, this might be due to women being more risk-averse and more favourable to adhere to governmental recommendations.

Besides that, the study revealed that older people rather comply with self-protective behaviours than younger individuals. In the already existing literature, this finding is not yet proven, as different sources either agree, disagree or did not find a relation between the two variables at all (Padidar et al., 2021; Papageorge et al., 2021). Looking at the results from this study and especially the ones of perceived susceptibility and severity, which will be described further below, shows that there might be an indication as to why older people engage more often in self-protective behaviours. For example, significant differences were detected between age groups and being vaccinated, the perceived severity, as well as, the probability of contracting the disease, with older people having received the Covid-19 vaccination more often and perceiving that contracting will make them more seriously ill. Therefore, it can be concluded that other influencing factors are involved in the association between age and self-protective behaviours and need further consideration.

For the other socio-demographic factors, no significant predictions could be found. As, for example, Kim & Crimmins (2020) found in their studies that ethnicity and socioeconomic status are indeed important factors to explain self-protective behaviour, the literature is not in line with the findings of this study. This could be explained with the relatively small ethnic diversity of the sample. Besides, significant correlations were detected for being retired and self-employed with employees. Even though multiple regression analysis did not reveal significant predictions, these correlations might give some indication. Being retired was found to be associated with engaging more often in self-protective behaviours, which could be explained by not having to worry about losing the job or being dissatisfied with how work and

employment are dealt with by the government during the pandemic. On the other hand, being self-employed with employees was found to be negatively associated with self-protective behaviours and thus these individuals are less adherent. This finding could be explained by the resulting stress of possibly losing the job or business.

Psychological characteristics

Furthermore, psychological and outcome measures were researched to predict self-protective behaviours. The results revealed that people are more likely to engage in the desired behaviour if they have a higher well-being. These findings are partly supported by the literature. Shah et al. (2021) revealed in their study that people with a high sense of emotional, social and psychological well-being have higher compliance with Covid-19 measures. Additionally, research on different topics also revealed the strong association between mental well-being and adherence to guidelines (Salman et al., 2019; Beeckman et al., 2020). Thus, the psychological component of the HBM is also an important factor in predicting self-protective health behaviours and needs to be considered for increasing adherence.

Perceived susceptibility and severity of getting Covid-19

Related to the factors of perceived susceptibility and severity, being vaccinated, being able to work from home, knowing people in the immediate social environment that have been infected with Covid-19, assessing the strictness of the measures, consuming more alcohol and avoiding going to the doctor were found to be significant predictors

These results were also found by other researchers (Kim & Crimmins, 2020) who confirm that perceiving a higher risk of getting Covid-19 and developing more severe complications is a strong predictor for behaviour. Additionally, even though being vaccinated reduces the risk of having severe complications, positive associations were found between behaviour and having received at least the first doses. This might be seen as a contradictory finding to perceived severity, however, it might be explained with only people getting vaccinated, who generally perceive the risk of Covid-19 as high and believe in the seriousness of the virus.

Besides, the findings for unwanted behaviour were also partly supported by literature. Jackson et al. (2021) researched changes in alcohol intake during the pandemic, showing that increased alcohol intake was amongst other things, associated with a lower perceived risk of harm. Drawing the line to the perceived risk of getting infected with Covid-19, the detected

association between unwanted behaviour and self-protective behaviour could be based on a generally lower level of perceived risks.

Therefore, the perceived susceptibility but especially the perceived severity of Covid-19 seems to be explanatory factors in predicting self-protective behaviours.

Perceived barriers and benefits

Lastly, the association between perceived benefits and barriers and engaging in self-protective behaviours were investigated and some significant predictions were found. Firstly, the results of this study showed that people are more often engaging in self-protective behaviour if their knowledge level on how to self-protect oneself is high, as well as their health literacy on how to find, judge and follow recommendations on Covid-19. Additionally, associations were found for the trust and use of sources, indicating that people who rely on social media and celebrities are not specifically engaging in self-protective behaviour. These findings are confirmed by existing literature, showing that the knowledge level, as well as the trust in governmental sources, is crucial for explaining behaviour during the pandemic (Yapi et al., 2021). Furthermore, studies revealed a negative association between social media use and behaviour (Allington et al., 2021). Even though no negative effects were found in this study, the findings reflect the results of other studies.

Regarding the financial stability, the findings of this study revealed that people engage more often in self-protective behaviours if they are unlikely to lose their job within the next three months and have fewer difficulties making ends meet. These findings are confirmed by other researchers who supported that personal financial concerns predicted lower adherence (Lavoie et al., 2021).

No significant predictions could be drawn from the housing and living situation. This is not in line with previous research as different research found that compliance is lower for people who are lacking the practical capacity to follow governmental induced measures, such as staying home (Kuiper et al., 2020). Nonetheless, taking all these findings into account it can be concluded that perceived barriers play a role in predicting self-protective behaviour during the Covid-19 pandemic.

Strengths and Limitations

The primary strength of the present study is the large representative sample. By implementing the quotas for data collection, comparable numbers of demographic groups could be created that allowed to get meaningful results. However, this study also showed some limitations that should be considered, since it might have influenced the results. Firstly, the study consisted of an online questionnaire. Even though this allows to reach a lot of people and is a quick and reliable way to collect data, only people could be reached that have access to the internet and a basic level of knowledge on how to use it. As the internet and digital literacy played an important factor during the pandemic, it would have been interesting to see how people deal with the pandemic, who do not have access to technical devices and a reliable internet connection. Secondly, the time of data collection should be considered when interpreting the results. At the time of data collection, the lockdown in the UK was over and most of the people went back to their normal life. This could have led to a recall bias, stating that previous events are not accurately remembered (Brassey & Mahtani, 2019). Especially, self-reported studies that ask about a longer period of time, similar to this present study struggle with this bias. Therefore, the study is limited due to its cross-sectional design and the self-reported outcomes.

Practical implications and further research

The present study provides valuable insights that can be used to better understand future outbreaks and compliance with governmental recommendations. Understanding that differences in adherence exist between various socio-demographic groups might allow governmental institutions to focus on the people that tend to be less adherent. This could increase the number of people that obey rules and thus society could be better protected from, for example, rapidly rising cases of Covid-19. In general, these findings can also be beneficial for explaining differences between groups regarding mortality and severity of Covid-19.

Nonetheless, future research is recommended to refine these results. As mentioned in the limitations of this study, it could be of interest to include people within the sample that do not have access to the internet. Additionally, another study method, such as experience sampling, where questionnaires are answered multiple times over a certain period of time, could be applied to reduce the risk of a recall bias as well as to receive more detailed insights into certain triggers. Furthermore, future studies should focus in more detail on possible relations between different variables to properly understand how they are interconnected.

Conclusion

This study contributes to the understanding of how demographics and other characteristics are influencing self-protective behaviour during the Covid-19 pandemic in the UK. The initial hypothesis whether adhering to the Covid-19 measures is influenced by the four components of social demographics, psychological measures, perceived susceptibility and severity and perceived barriers and benefits as described in the Health Belief Model can be accepted. The findings of this study should be considered for future outbreaks, as they can give insight into the least adherent groups to facilitate health behaviours.

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Appendix

Table A1

Number of questions from the questionnaire and where they were retrieved from, distributed among the different included scales.

WHO	EQLS/EWCS	NEWS	Digital literacy scale	Scarcity scale	CFCS	Covid19-QoL	PHQ-4	Additional questions
1, 2, 3, 4, 5, 6, 18, 24, 37, 38, 39, 40, 41, 42, 46, 47, 48, 49, 50, 51, 52, 53, 65	8, 9, 19, 22, 23, 27, 28, 29, 30, 32, 33, 34, 63, 66, 68, 69, 70, 71	20	55, 56, 57, 58	59, 60	61, 62	67	72	7, 10, 11, 12, 13, 14, 15, 16, 17, 22b, 25, 26, 35, 36, 44, 45

Note. Corresponding numbers can be found in Apendix A3

Correlation matrix
Table A2

Self-employed with employees		Employee		SES		Highest level of education		Age in years		Gender (dich: female)		
P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	
											1	Gender (dich: female)
									1	0,220	-0,039	Age in years
							1	0,000	-,137**	0,879	0,005	Highest level of education
					1	0,000	,347**	0,021	-,073*	0,044	,064*	SES
			1	0,000	,284**	0,000	,193**	0,000	-,291**	0,373	-0,028	Employee
	1	0,000	-,175**	0,025	,071*	0,312	0,032	0,001	-,106**	0,004	-,091**	Self-employed with employees
0,188	-0,042	0,000	-,253**	0,752	0,010	0,008	,084**	0,198	-0,041	0,705	0,012	Self-employed without
0,138	-0,047	0,000	-,285**	0,000	-,147**	0,002	-,100**	0,074	-0,056	0,977	0,001	Unemployed
0,234	-0,038	0,000	-,229**	0,000	-,168**	0,000	-,148**	0,721	0,011	0,308	-0,032	Unable to work due to long-term
0,011	-,081*	0,000	-,491**	0,000	-,124**	0,000	-,125**	0,000	,612**	0,247	-0,037	Retired
0,354	-0,029	0,000	-,178**	0,078	-0,056	0,421	0,026	0,000	-,267**	0,138	0,047	Student
0,151	-0,045	0,000	-,276**	0,001	-,103**	0,012	-,079*	0,284	-0,034	0,000	,162**	Homemaker
0,000	,156**	0,000	,120**	0,000	,228**	0,000	,139**	0,000	-,128**	0,005	-,089**	Income
0,421	-0,025	0,004	-,092**	0,021	,073*	0,444	0,024	0,000	,493**	0,538	-0,019	Vaccination
0,061	0,059	0,232	0,038	0,743	0,010	0,656	0,014	0,023	-,072*	0,283	0,034	Own probability of getting
0,113	-0,063	0,095	-0,067	0,886	-0,006	0,734	-0,014	0,000	,188**	0,282	-0,043	High risk for Covid-19 at work?
0,006	-,109**	0,001	,134**	0,000	-,391**	0,000	-,200**	0,001	,126**	0,931	0,003	Ability to work from home since
0,002	-,096**	0,007	-,086**	0,001	-,108**	0,073	-0,057	0,000	,246**	0,093	-0,053	Infected with Covid-19?
0,197	-0,041	0,000	-,220**	0,014	-,078*	0,039	-,066*	0,000	,242**	0,865	-0,005	Chronic condition
0,587	-0,017	0,000	-,157**	0,034	-,067*	0,001	-,108**	0,044	,064*	0,039	-,065*	Disability
0,590	-0,017	0,003	-,095**	0,006	-,086**	0,026	-,071*	0,000	,192**	0,213	-0,039	Severity of contracting Covid-19
0,253	-0,036	0,059	-0,060	0,001	-,110**	0,000	-,113**	0,000	,174**	0,006	,088**	BMI
0,072	0,057	0,000	,160**	0,000	,135**	0,000	,171**	0,000	-,131**	0,873	-0,005	General Health Status
0,668	0,014	0,003	-,093**	0,095	-0,053	0,002	-,098**	0,001	,101**	0,003	-,094**	Knowing people infected with
0,369	-0,028	0,019	-,074*	0,031	-,068*	0,753	-0,010	0,040	,065*	0,292	-0,033	Knowing someone who died
0,786	-0,009	0,000	-,111**	0,018	-,075*	0,000	-,121**	0,000	,127**	0,030	-,069*	Living alone
0,041	,065*	0,000	,248**	0,001	,107**	0,000	,128**	0,000	-,345**	0,008	,084**	Living with children under 18
0,899	-0,004	0,000	-,143**	0,888	0,004	0,150	0,046	0,000	,153**	0,915	-0,003	Living together with people from
0,374	-0,028	0,011	,080*	0,019	,074*	0,697	0,012	0,296	-0,033	0,441	0,024	Other living situation
0,023	,072*	0,157	0,045	0,000	,169**	0,000	,198**	0,001	-,101**	0,679	-0,013	Bathrooms
0,004	,092**	0,517	0,021	0,000	,174**	0,000	,176**	0,665	-0,014	0,303	0,033	Bedrooms
0,539	0,019	0,657	-0,014	0,008	,084**	0,510	0,021	0,011	,080*	0,029	,069*	Do you have a garden?
0,030	-,069*	0,792	-0,008	0,025	,071*	0,004	,091**	0,000	,271**	0,748	-0,010	NEWS
0,083	0,055	0,000	,137**	0,000	,233**	0,000	,148**	0,207	0,040	0,579	0,018	car
0,470	0,023	0,409	0,026	0,001	,104**	0,135	0,047	0,000	-,224**	0,588	0,017	Loosing job - permamnently
0,000	,139**	0,565	0,018	0,988	0,000	0,034	,067*	0,000	-,222**	0,030	-,069*	Loosing job - temproarily
0,572	-0,018	0,000	,147**	0,573	0,018	0,189	0,042	0,000	-,119**	0,478	-0,022	Loosing job - furloughed
0,005	-,089**	0,000	-,110**	0,004	-,090**	0,002	-,099**	0,000	,367**	0,214	0,039	Loosing job - no
0,024	-,092*	0,477	0,029	0,118	-0,064	0,101	-0,067	0,000	,332**	0,106	0,066	Loosing job in next three months
0,167	-0,044	0,000	-,170**	0,004	-,090**	0,360	-0,029	0,046	,063*	0,000	,127**	Private financial situation over
0,130	-0,048	0,000	-,114**	0,250	-0,036	0,967	-0,001	0,000	,197**	0,544	0,019	Assessing strictness of Covid-19
0,633	0,015	0,121	0,049	0,100	-0,052	0,605	-0,016	0,000	-,285**	0,880	0,005	Health Literacy WHO
0,184	-0,042	0,004	,090**	0,000	,116**	0,000	,144**	0,975	-0,001	0,030	,069*	Internetcompetency
0,006	-,087**	0,144	-0,046	0,138	0,047	0,003	,096**	0,000	,217**	0,132	0,048	Knoweldge level
0,372	0,028	0,148	0,046	0,003	,094**	0,000	,114**	0,026	-,070*	0,001	,105**	Trust and use of sources
0,121	0,049	0,000	,158**	0,094	0,053	0,001	,107**	0,000	-,300**	0,005	,088**	Scarcity scale
0,329	-0,031	0,001	-,104**	0,006	,087**	0,000	,119**	0,000	,207**	0,098	0,052	CFCS
0,011	,081*	0,068	0,058	0,924	-0,003	1,000	0,000	0,000	-,389**	0,090	0,054	PHQ-4
0,055	0,061	0,117	0,050	0,135	0,047	0,057	0,060	0,000	-,279**	0,130	0,048	Covid19-QoL
0,081	0,055	0,000	,123**	0,230	0,038	0,039	,065*	0,000	-,250**	0,084	0,055	EQLS - Optimism
0,012	,080*	0,013	,078*	0,428	0,025	0,135	0,047	0,000	-,405**	0,073	0,057	EQLS - Feeling
0,013	,079*	0,732	0,011	0,124	0,049	0,074	0,057	0,018	,075*	0,007	-,085**	EQLS - Wellbeing
0,000	,127**	0,000	,135**	0,007	,085**	0,083	0,055	0,000	-,348**	0,146	0,046	Unwanted Behaviour
0,012	-,080*	0,163	-0,044	0,366	0,029	0,240	0,038	0,000	,172**	0,000	,166**	Self-protective behaviour

PREDICTORS FOR ADHERENCE TO COVID-19 MEASURES

Homemaker		Student		Retired		Unable to work due to long-term illness		Unemployed		Self-employed without employees		
P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	
												Gender (dich: female)
												Age in years
												Highest level of education
												SES
												Employee
												Self-employed with employees
											1	Self-employed without
									1	0,032	-,068*	Unemployed
							1	0,052	-0,061	0,085	-0,055	Unable to work due to long-term
					1	0,001	-,106**	0,000	-,132**	0,000	-,117**	Retired
			1	0,009	-,082**	0,226	-0,038	0,131	-0,048	0,180	-0,042	Student
	1	0,144	-0,046	0,000	-,128**	0,060	-0,059	0,019	-,074*	0,037	-,066*	Homemaker
0,001	-,105**	0,772	0,009	0,140	-0,047	0,001	-,109**	0,044	-,064*	0,681	-0,013	Income
0,185	-0,042	0,000	-,178**	0,000	,287**	0,910	-0,004	0,001	-,100**	0,515	0,021	Vaccination
0,940	-0,002	0,574	0,018	0,057	-0,060	0,556	0,019	0,577	-0,018	0,313	-0,032	Own probability of getting
	.c	0,159	0,056		.c		.c		.c	0,024	,090*	High risk for Covid-19 at work?
	.c	0,068	-0,073		.c		.c		.c	0,213	-0,050	Ability to work from home since
0,300	0,033	0,218	-0,039	0,001	,101**	0,066	0,058	0,117	0,050	0,305	-0,032	Infected with Covid-19?
0,917	0,003	0,067	-0,058	0,000	,206**	0,000	,303**	0,094	-0,053	0,582	-0,017	Chronic condition
0,250	-0,036	0,981	0,001	0,003	,095**	0,000	,315**	0,033	-,068*	0,561	0,018	Disability
0,591	0,017	0,005	-,089**	0,010	,082**	0,000	,140**	0,887	-0,004	0,925	0,003	Severity of contracting Covid-19
0,209	0,040	0,002	-,098**	0,017	,075*	0,001	,103**	0,835	-0,007	0,350	-0,030	BMI
0,056	-0,060	0,111	0,050	0,001	-,104**	0,000	-,224**	0,953	-0,002	0,448	0,024	General Health Status
0,008	,083**	0,015	-,077*	0,276	0,034	0,546	0,019	0,122	0,049	0,460	0,023	Knowing people infected with
0,027	,070*	0,625	0,015	0,457	0,024	0,936	0,003	0,274	0,035	0,749	0,010	Knowing someone who died
0,000	-,139**	0,089	-0,054	0,000	,142**	0,000	,110**	0,007	,085**	0,857	0,006	Living alone
0,000	,158**	0,501	0,021	0,000	-,306**	0,004	-,092**	0,004	-,090**	0,015	-,077*	Living with children under 18
0,080	0,055	0,032	-,068*	0,000	,160**	0,048	,063*	0,462	-0,023	0,918	0,003	Living together with people from
0,694	-0,012	0,000	,116**	0,021	-,073*	0,026	-,070*	0,450	-0,024	0,812	-0,008	Other living situation
0,402	-0,027	0,000	,123**	0,165	-0,044	0,000	-,119**	0,100	-0,052	0,262	0,036	Bathrooms
0,357	0,029	0,031	,068*	0,977	-0,001	0,000	-,170**	0,033	-,067*	0,223	0,039	Bedrooms
0,203	0,040	0,836	-0,007	0,060	0,060	0,005	-,089**	0,121	-0,049	0,664	0,014	Do you have a garden?
0,620	0,016	0,976	0,001	0,000	,142**	0,002	-,097**	0,016	-,076*	0,688	-0,013	NEWS
0,629	-0,015	0,136	-0,047	0,209	0,040	0,000	-,160**	0,000	-,172**	0,600	-0,017	car
0,280	-0,034	0,234	0,038	0,000	-,126**	0,324	-0,031	0,000	,121**	0,169	0,044	Loosing job - permamnently
0,161	-0,044	0,522	0,020	0,000	-,134**	0,049	-,062*	0,577	-0,018	0,000	,196**	Loosing job - temproarily
0,965	-0,001	0,546	-0,019	0,000	-,121**	0,590	-0,017	0,087	-0,054	0,787	-0,009	Loosing job - furloughed
0,093	0,053	0,335	-0,031	0,000	,241**	0,027	,070*	0,092	-0,053	0,000	-,144**	Loosing job - no
	.c		.c		.c		.c		.c	0,539	0,025	Loosing job in next three months
0,012	,079*	0,037	,066*	0,930	0,003	0,103	0,052	0,001	,105**	0,002	,096**	Private financial situation over
0,515	0,021	0,053	0,061	0,000	,129**	0,869	0,005	0,919	-0,003	0,921	-0,003	Assessing strictness of Covid-19
0,897	-0,004	0,057	0,060	0,000	-,206**	0,008	,084**	0,086	0,054	0,098	0,052	Health Literacy WHO
0,705	-0,012	0,147	0,046	0,258	-0,036	0,079	-0,056	0,027	-,070*	0,861	0,006	Internetcompetency
0,910	0,004	0,881	0,005	0,000	,123**	0,640	0,015	0,075	-0,056	0,984	0,001	Knoweldge level
0,518	-0,020	0,272	0,035	0,625	-0,015	0,001	-,100**	0,605	-0,016	0,761	0,010	Trust and use of sources
0,880	-0,005	0,037	,066*	0,000	-,236**	0,778	-0,009	0,720	-0,011	0,967	-0,001	Scarcity scale
0,912	-0,003	0,370	0,028	0,000	,139**	0,072	-0,057	0,213	-0,039	0,003	,094**	CFCS
0,498	0,021	0,144	0,046	0,000	-,280**	0,000	,168**	0,049	,062*	0,681	0,013	PHQ-4
0,396	0,027	0,050	0,062	0,000	-,223**	0,001	,107**	0,262	0,036	0,593	0,017	Covid19-QoL
0,530	0,020	0,842	0,006	0,000	-,185**	0,646	0,015	0,822	0,007	0,197	-0,041	EQLS - Optimism
0,960	0,002	0,010	,081*	0,000	-,295**	0,000	,147**	0,099	0,052	0,475	0,023	EQLS - Feeling
0,109	-0,051	0,724	0,011	0,000	,122**	0,000	-,152**	0,041	-,065*	0,394	-0,027	EQLS - Wellbeing
0,672	-0,013	0,286	0,034	0,000	-,214**	0,207	0,040	0,273	-0,035	0,371	-0,028	Unwanted Behaviour
0,210	0,040	0,356	0,029	0,002	,101**	0,654	0,014	0,121	-0,049	0,186	-0,042	Self-protective behaviour

PREDICTORS FOR ADHERENCE TO COVID-19 MEASURES

Infected with Covid-19?		Ability to work from home since the beginning of Covid-19?		High risk for Covid-19 at work?		Own probability of getting infected with Covid-19?		vaccination		Income		
P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	
												Gender (dich: female)
												Age in years
												Highest level of education
												SES
												Employee
												Self-employed with employees
												Self-employed without
												Unemployed
												Unable to work due to long-term
												Retired
												Student
												Homemaker
											1	Income
									1	0,674	0,013	Vaccination
							1	0,700	-0,012	0,677	0,013	Own probability of getting
					1	0,024	-,090*	0,061	-0,075	0,057	-0,076	High risk for Covid-19 at work?
			1	0,006	-,109**	0,602	-0,021	0,300	0,041	0,000	-,200**	Ability to work from home since
	1	0,009	,104**	0,000	,279**	0,018	-,075*	0,167	0,044	0,000	-,128**	Infected with Covid-19?
0,911	-0,004	0,471	-0,029	0,017	-,095*	0,482	-0,022	0,000	,164**	0,221	-0,039	Chronic condition
0,133	-0,048	0,004	-,114**	0,003	-,119**	0,036	,066*	0,014	,077*	0,972	-0,001	Disability
0,050	,062*	0,268	-0,044	0,002	-,123**	0,000	,316**	0,000	,120**	0,036	-,066*	Severity of contracting Covid-19
0,007	,086**	0,017	,095*	0,077	0,071	0,001	,101**	0,000	,130**	0,004	-,092**	BMI
0,029	,069*	0,250	0,046	0,008	,106**	0,024	-,072*	0,060	-0,059	0,000	,179**	General Health Status
0,000	,271**	0,204	0,051	0,000	,206**	0,003	-,093**	0,824	-0,007	0,033	-,067*	Knowing people infected with
0,000	,218**	0,140	0,059	0,000	,231**	0,015	-,077*	0,452	-0,024	0,000	-,115**	Knowing someone who died
0,641	-0,015	0,111	-0,064	0,758	-0,012	0,891	0,004	0,002	,097**	0,000	-,156**	Living alone
0,000	-,132**	0,097	-0,066	0,006	-,110**	0,006	,087**	0,000	-,151**	0,000	,116**	Living with children under 18
0,701	0,012	0,962	-0,002	0,228	-0,048	0,157	-0,045	0,001	,101**	0,194	0,041	Living together with people from
0,054	0,061	0,234	0,047	0,001	,134**	0,340	-0,030	0,137	-0,047	0,039	,065*	Other living situation
0,056	-0,061	0,000	-,195**	0,211	-0,050	0,168	-0,044	0,930	0,003	0,000	,316**	Bathrooms
0,322	-0,031	0,040	-,082*	0,989	0,001	0,837	-0,007	0,720	0,011	0,000	,240**	Bedrooms
0,725	-0,011	0,609	-0,020	0,776	0,011	0,687	0,013	0,295	0,033	0,000	,145**	Do you have a garden?
0,000	,190**	0,034	,084*	0,000	,234**	0,004	-,090**	0,009	,083**	0,414	0,026	NEWS
0,057	-0,060	0,033	-,085*	0,054	-0,077	0,661	0,014	0,001	,107**	0,000	,185**	car
0,000	-,215**	0,000	-,153**	0,000	-,198**	0,323	0,031	0,044	-,064*	0,000	,129**	Loosing job - permamnently
0,002	-,096**	0,667	0,017	0,026	-,089*	0,049	,062*	0,202	-0,040	0,253	0,036	Loosing job - temproarily
0,018	-,075*	0,189	0,052	0,842	0,008	0,118	0,049	0,117	-0,050	0,260	0,036	Loosing job - furloughed
0,000	,262**	0,065	0,074	0,000	,202**	0,006	-,087**	0,002	,100**	0,000	-,139**	Loosing job - no
0,000	,222**	0,000	,185**	0,000	,170**	0,000	-,229**	0,031	,088*	0,002	-,126**	Loosing job in next three months
0,022	,073*	0,000	,164**	0,088	0,068	0,143	0,046	0,669	0,014	0,000	-,242**	Private financial situation over
0,000	,131**	0,324	0,039	0,229	0,048	0,000	,162**	0,000	,180**	0,002	-,098**	Assessing strictness of Covid-19
0,002	-,099**	0,097	0,066	0,000	-,143**	0,755	-0,010	0,000	-,115**	0,968	0,001	Health Literacy WHO
0,003	,093**	0,006	-,109**	0,000	,189**	0,835	-0,007	0,443	0,024	0,313	0,032	Internetcompetency
0,000	,195**	0,638	0,019	0,008	,106**	0,468	0,023	0,004	,092**	0,027	-,070*	Knoweldge level
0,043	-,064*	0,000	-,165**	0,046	-,080*	0,000	,151**	0,041	,065*	0,000	,138**	Trust and use of sources
0,001	-,110**	0,012	-,100*	0,032	-,085*	0,000	,193**	0,000	-,152**	0,003	,095**	Scarcity scale
0,000	,122**	0,692	-0,016	0,003	,120**	0,078	-0,056	0,000	,115**	0,025	-,071*	CFCS
0,000	-,134**	0,000	-,144**	0,000	-,188**	0,000	,207**	0,000	-,191**	0,035	,067*	PHQ-4
0,005	-,088**	0,044	-,080*	0,031	-,086*	0,000	,214**	0,000	-,152**	0,023	,072*	Covid19-QoL
0,004	-,090**	0,159	-0,056	0,593	-0,021	0,000	,140**	0,000	-,143**	0,000	,125**	EQLS - Optimism
0,000	-,158**	0,002	-,122**	0,000	-,143**	0,000	,202**	0,000	-,181**	0,022	,073*	EQLS - Feeling
0,751	-0,010	0,360	-0,037	0,729	-0,014	0,012	-,079*	0,240	0,037	0,000	,176**	EQLS - Wellbeing
0,000	-,248**	0,000	-,140**	0,000	-,254**	0,000	,176**	0,000	-,135**	0,000	,132**	Unwanted Behaviour
0,001	,106**	0,003	-,118**	0,293	0,042	0,000	,137**	0,000	,151**	0,497	0,022	Self-protective behaviour

Bathrooms		Other living situation		Living together with people from Covid-19 risk group		Living with children under 18		Living alone		Knowing someone who died from Covid		
P.-value	R	P.-value	R	P.-value	R	P.-value	R	P.-value	R	P.-value	R	
												Gender (dich: female)
												Age in years
												Highest level of education
												SES
												Employee
												Self-employed with employees
												Self-employed without
												Unemployed
												Unable to work due to long-term
												Retired
												Student
												Homemaker
												Income
												Vaccination
												Own probability of getting
												High risk for Covid-19 at work?
												Ability to work from home since
												Infected with Covid-19?
												Chronic condition
												Disability
												Severity of contracting Covid-19
												BMI
												General Health Status
												Knowing people infected with
											1	Knowing someone who died
									1	0,681	0,013	Living alone
							1	0,000	-,367**	0,009	-,082**	Living with children under 18
					1	0,000	-,134**	0,000	-,249**	0,104	-0,051	Living together with people from
			1	0,000	-,264**	0,006	-,088**	0,000	-,422**	0,028	,070*	Other living situation
	1	0,001	,101**	0,530	0,020	0,000	,119**	0,000	-,157**	0,003	-,093**	Bathrooms
0,000	,531**	0,000	,188**	0,000	,116**	0,000	,193**	0,000	-,364**	0,088	-0,054	Bedrooms
0,000	,255**	0,000	,116**	0,000	,140**	0,001	,102**	0,000	-,238**	0,051	-0,062	Do you have a garden?
0,004	,090**	0,001	,101**	0,758	-0,010	0,012	-,079*	0,710	-0,012	0,012	,079*	NEWS
0,000	,222**	0,001	,101**	0,001	,101**	0,000	,152**	0,000	-,262**	0,000	-,119**	car
0,002	,096**	0,002	-,096**	0,816	-0,007	0,001	,102**	0,938	-0,002	0,000	-,147**	Loosing job - permamnently
0,867	0,005	0,003	-,093**	0,595	-0,017	0,151	0,045	0,425	0,025	0,142	-0,046	Loosing job - temproarily
0,845	0,006	0,017	,075*	0,623	-0,016	0,340	0,030	0,906	-0,004	0,594	-0,017	Loosing job - furloughed
0,012	-,080*	0,006	,087**	0,449	0,024	0,000	-,121**	0,730	-0,011	0,000	,150**	Loosing job - no
0,815	0,010	0,000	,158**	0,570	-0,023	0,002	-,127**	0,044	-,082*	0,006	,111**	Loosing job in next three months
0,002	-,096**	0,115	0,050	0,238	0,037	0,873	-0,005	0,398	-0,027	0,986	0,001	Private financial situation over
0,602	-0,016	0,549	0,019	0,048	,063*	0,014	-,077*	0,699	0,012	0,854	0,006	Assessing strictness of Covid-19
0,953	-0,002	0,536	-0,020	0,462	-0,023	0,010	,081*	0,123	-0,049	0,003	-,094**	Health Literacy WHO
0,011	,080*	0,005	,090**	0,965	0,001	0,036	,066*	0,002	-,099**	0,827	0,007	Internetcompetency
0,081	-0,055	0,002	,096**	0,189	0,042	0,017	-,076*	0,628	-0,015	0,030	,069*	Knoweldge level
0,008	,084**	0,746	0,010	0,627	-0,015	0,000	,111**	0,011	-,080*	0,000	-,129**	Trust and use of sources
0,207	0,040	0,880	0,005	0,165	-0,044	0,000	,211**	0,008	-,083**	0,000	-,130**	Scarcity scale
0,334	0,031	0,200	0,041	0,132	0,048	0,000	-,137**	0,162	0,044	0,204	0,040	CFCS
0,719	0,011	0,021	-,073*	0,759	-0,010	0,000	,154**	0,755	0,010	0,000	-,116**	PHQ-4
0,764	0,009	0,917	-0,003	0,663	0,014	0,000	,147**	0,059	-0,060	0,005	-,089**	Covid19-QoL
0,851	-0,006	0,556	-0,019	0,013	-,078*	0,000	,231**	0,001	-,107**	0,089	-0,054	EQLS - Optimism
0,264	0,035	0,107	-0,051	0,042	-,064*	0,000	,164**	0,492	0,022	0,004	-,091**	EQLS - Feeling
0,000	,113**	0,213	-0,039	0,108	-0,051	0,055	0,061	0,919	-0,003	0,458	-0,024	EQLS - Wellbeing
0,120	0,049	0,432	-0,025	0,080	-0,055	0,000	,228**	0,253	-0,036	0,000	-,186**	Unwanted Behaviour
0,111	0,051	0,662	0,014	0,606	0,016	0,865	0,005	0,561	-0,019	0,336	-0,031	Self-protective behaviour

Loosing job - temproarily		Loosing job - permamnently		car		NEWS		Do you have a garden?		Bedrooms		
P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	
												Gender (dich: female)
												Age in years
												Highest level of education
												SES
												Employee
												Self-employed with employees
												Self-employed without
												Unemployed
												Unable to work due to long-term
												Retired
												Student
												Homemaker
												Income
												Vaccination
												Own probability of getting
												High risk for Covid-19 at work?
												Ability to work from home since
												Infected with Covid-19?
												Chronic condition
												Disability
												Severity of contracting Covid-19
												BMI
												General Health Status
												Knowing people infected with
												Knowing someone who died
												Living alone
												Living with children under 18
												Living together with people from
												Other living situation
												Bathrooms
											1	Bedrooms
								1	0,000	,507**	Do you have a garden?
						1	0,002	,100**	0,006	,086**	NEWS
				1	0,091	0,054	0,000	,256**	0,000	,298**	car
		1	0,026	,070*	0,000	-,223**	0,878	0,005	0,986	0,001	Loosing job - permamnently
1		-,110**	0,190	-0,042	0,000	-,113**	0,007	-,086**	0,620	-0,016	Loosing job - temproarily
-,071*	0,024	-,100**	0,456	0,024	0,111	-0,050	0,659	0,014	0,914	0,003	Loosing job - furloughed
-,465**	0,000	-,649**	0,183	-0,042	0,000	,265**	0,217	0,039	0,825	0,007	Loosing job - no
-,167**	0,000	-,402**	0,802	0,010	0,000	,419**	0,173	0,056	0,001	,135**	Loosing job in next three months
0,021	0,500	-0,001	0,003	-,094**	0,047	-,063*	0,226	-0,038	0,703	-0,012	Private financial situation over
-0,029	0,352	-,114**	0,735	-0,011	0,364	0,029	0,933	-0,003	0,913	-0,003	Assessing strictness of Covid-19
0,052	0,101	,177**	0,087	-0,054	0,000	-,325**	0,031	-,068*	0,513	-0,021	Health Literacy WHO
-0,052	0,098	-,112**	0,025	,071*	0,000	,282**	0,003	,093**	0,009	,083**	Internetcompetency
-,122**	0,000	-,229**	0,528	0,020	0,000	,346**	0,012	,079*	0,249	0,037	Knoweldge level
0,046	0,148	0,054	0,000	,138**	0,029	,069*	0,033	,067*	0,041	,065*	Trust and use of sources
,086**	0,006	,136**	0,599	0,017	0,004	-,092**	0,236	0,038	0,900	0,004	Scarcity scale
-,081*	0,010	-,114**	0,330	-0,031	0,000	,148**	0,798	0,008	0,053	0,061	CFCS
,092**	0,003	,232**	0,208	-0,040	0,000	-,293**	0,374	-0,028	0,108	-0,051	PHQ-4
0,057	0,070	,202**	0,813	-0,007	0,000	-,202**	0,232	0,038	0,354	0,029	Covid19-QoL
,066*	0,036	,090**	0,078	0,056	0,571	0,018	0,269	0,035	0,453	0,024	EQLS - Optimism
,086**	0,007	,207**	0,877	-0,005	0,000	-,258**	0,715	0,012	0,888	-0,004	EQLS - Feeling
-0,002	0,949	0,002	0,005	,089**	0,000	,192**	0,171	0,043	0,150	0,046	EQLS - Wellbeing
,132**	0,000	,303**	0,151	0,045	0,000	-,291**	0,649	-0,014	0,804	0,008	Unwanted Behaviour
-0,043	0,179	-,075*	0,190	0,042	0,000	,194**	0,001	,102**	0,014	,078*	Self-protective behaviour

Health Literacy WHO		Assessing strictness of Covid-19 measures		Private financial situation over the past year		Loosing job in next three months		Loosing job - no		Loosing job - furloughed		
P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	
												Gender (dich: female)
												Age in years
												Highest level of education
												SES
												Employee
												Self-employed with employees
												Self-employed without
												Unemployed
												Unable to work due to long-term
												Retired
												Student
												Homemaker
												Income
												Vaccination
												Own probability of getting
												High risk for Covid-19 at work?
												Ability to work from home since
												Infected with Covid-19?
												Chronic condition
												Disability
												Severity of contracting Covid-19
												BMI
												General Health Status
												Knowing people infected with
												Knowing someone who died
												Living alone
												Living with children under 18
												Living together with people from
												Other living situation
												Bathrooms
												Bedrooms
												Do you have a garden?
												NEWS
												car
												Loosing job - permamnently
												Loosing job - temproarily
											1	Loosing job - furloughed
								1	0,000	-,422**		Loosing job - no
						1	0,000	,458**	0,044	-,082*		Loosing job in next three months
				1	0,960	-0,002	0,066	-0,058	0,007	,085**		Private financial situation over
		1	0,000	,167**	0,000	,154**	0,000	,113**	0,633	-0,015		Assessing strictness of Covid-19
1	0,001	-,109**	0,054	0,061	0,000	-,183**	0,000	-,181**	0,404	0,026		Health Literacy WHO
-,389**	0,185	0,042	0,044	-,064*	0,000	,319**	0,001	,106**	0,546	0,019		Internetcompetency
-,422**	0,000	,180**	0,075	0,056	0,000	,300**	0,000	,265**	0,306	-0,032		Knoweldge level
-,233**	0,005	,088**	0,777	-0,009	0,001	-,133**	0,014	-,077*	0,607	0,016		Trust and use of sources
0,018	0,005	-,089**	0,724	-0,011	0,000	-,308**	0,000	-,172**	0,310	0,032		Scarcity scale
-,181**	0,000	,177**	0,038	,066*	0,000	,259**	0,000	,175**	0,020	-,074*		CFCS
,198**	0,750	-0,010	0,000	,130**	0,000	-,430**	0,000	-,252**	0,262	0,035		PHQ-4
,217**	0,322	-0,031	0,000	,135**	0,000	-,344**	0,000	-,220**	0,074	0,056		Covid19-QoL
-0,010	0,000	-,124**	0,434	-0,025	0,000	-,156**	0,000	-,147**	0,023	,072*		EQLS - Optimism
,213**	0,207	-0,040	0,008	,084**	0,000	-,445**	0,000	-,257**	0,006	,088**		EQLS - Feeling
-,168**	0,009	-,082**	0,000	-,166**	0,066	0,075	0,760	-0,010	0,581	0,017		EQLS - Wellbeing
,140**	0,003	-,095**	0,762	-0,010	0,000	-,382**	0,000	-,353**	0,013	,079*		Unwanted Behaviour
-,371**	0,000	,269**	0,000	,111**	0,000	,161**	0,005	,089**	0,706	-0,012		Self-protective behaviour

PHQ-4		CFCS		Scarcity scale		Trust and use of sources		Knoweldge level		Internetcompetency		
P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	
												Gender (dich: female)
												Age in years
												Highest level of education
												SES
												Employee
												Self-employed with employees
												Self-employed without
												Unemployed
												Unable to work due to long-term
												Retired
												Student
												Homemaker
												Income
												Vaccination
												Own probability of getting
												High risk for Covid-19 at work?
												Ability to work from home since
												Infected with Covid-19?
												Chronic condition
												Disability
												Severity of contracting Covid-19
												BMI
												General Health Status
												Knowing people infected with
												Knowing someone who died
												Living alone
												Living with children under 18
												Living together with people from
												Other living situation
												Bathrooms
												Bedrooms
												Do you have a garden?
												NEWS
												car
												Loosing job - permamnently
												Loosing job - temproarily
												Loosing job - furloughed
												Loosing job - no
												Loosing job in next three months
												Private financial situation over
												Assessing strictness of Covid-19
												Health Literacy WHO
											1	Internetcompetency
									1	0,000	,329**	Knoweldge level
							1	0,000	,149**	0,000	,245**	Trust and use of sources
					1	0,000	,291**	0,966	0,001	0,000	,163**	Scarcity scale
			1	0,000	-,200**	0,363	0,029	0,000	,181**	0,000	,129**	CFCS
	1	0,000	-,168**	0,000	,370**	0,000	,145**	0,000	-,165**	0,013	-,078*	PHQ-4
0,000	,683**	0,000	-,147**	0,000	,402**	0,000	,150**	0,000	-,122**	0,809	-0,008	Covid19-QoL
0,000	,261**	0,000	-,230**	0,000	,411**	0,000	,259**	0,238	0,037	0,000	,160**	EQLS - Optimism
0,000	,807**	0,000	-,177**	0,000	,416**	0,000	,171**	0,000	-,155**	0,133	-0,048	EQLS - Feeling
0,000	-,409**	0,923	-0,003	0,037	-,066*	0,024	,071*	0,004	,092**	0,000	,116**	EQLS - Wellbeing
0,000	,418**	0,000	-,163**	0,000	,330**	0,000	,140**	0,000	-,151**	0,018	-,075*	Unwanted Behaviour
0,590	0,017	0,000	,146**	0,001	,104**	0,000	,382**	0,000	,354**	0,000	,296**	Self-protective behaviour

	Covid19-QoL		EQLS - Optimism		EQLS - Feeling		EQLS - Wellbeing		Unwanted Behaviour		Self-protective behaviour	
	R	P-value	R	P-value	R	P-value	R	P-value	R	P-value	R	P-value
Gender (dich: female)												
Age in years												
Highest level of education												
SES												
Employee												
Self-employed with employees												
Self-employed without												
Unemployed												
Unable to work due to long-term												
Retired												
Student												
Homemaker												
Income												
Vaccination												
Own probability of getting												
High risk for Covid-19 at work?												
Ability to work from home since												
Infected with Covid-19?												
Chronic condition												
Disability												
Severity of contracting Covid-19												
BMI												
General Health Status												
Knowing people infected with												
Knowing someone who died												
Living alone												
Living with children under 18												
Living together with people from												
Other living situation												
Bathrooms												
Bedrooms												
Do you have a garden?												
NEWS												
car												
Loosing job - permamnently												
Loosing job - temproarily												
Loosing job - furloughed												
Loosing job - no												
Loosing job in next three months												
Private financial situation over												
Assessing strictness of Covid-19												
Health Literacy WHO												
Internetcompetency												
Knoweldge level												
Trust and use of sources												
Scarcity scale												
CFCS												
PHQ-4												
Covid19-QoL	1											
EQLS - Optimism	,287**	0,000	1									
EQLS - Feeling	,703**	0,000	,326**	0,000	1							
EQLS - Wellbeing	-,392**	0,000	,113**	0,000	-,345**	0,000	1					
Unwanted Behaviour	,404**	0,000	,218**	0,000	,408**	0,000	-,197**	0,000	1			
Self-protective behaviour	0,009	0,775	,134**	0,000	0,003	0,919	,086**	0,007	-0,040	0,206	1	

*Note: * .p<.05, ** p<.001, variables of jobposition, losing the job, housing situation, and gender are dichtomoised (1= specific variable, 0= all other variables)*

Appendix A3

Full Questionnaire

One year of Covid-19: a study on how the pandemic impacted health and well-being

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Start of Block: Participant Information Sheet

Dear Participant,

This scientific study entitled "One year of Covid-19: a study on how the pandemic impacted health and well-being" is a collaboration between Newcastle University and the University of Twente. Before you make a final decision about participating in the study, we ask you to read the following information letter carefully. Take the time to make a decision and, if you have any questions, please do not hesitate to contact the researcher.

What is this project about, and do I have to take part? This study aims at understanding the impact that the Covid-19 pandemic has had thus far on our lives, health and wellbeing. We also want to understand how you think about the pandemic and the policies around the pandemic now, after more than a year of living with the pandemic in the United Kingdom. Participation is open to people at the age of 18 or over, living in the United Kingdom and is entirely voluntary.

What are the benefits and risks of taking part? There are no foreseeable risks for you when taking part in the survey other than time spent on the survey and potential discomfort. Should you feel uncomfortable and want to leave the study you are free to do so at any time without any consequences.

What will you be asked and what will happen to the information I give you? This study will involve answering a 25-minute survey which will be asking you questions relating to the Coronavirus. More precisely, you will be asked questions about yourself, your knowledge of the coronavirus, the actions you have taken to protect yourself from the virus, your trust in various stakeholders, and your own fears and worries relating to the Coronavirus pandemic. Your data will be handled completely anonymous, and it will not be possible to identify you individually from your answers. Your anonymous data will be collected by MRFGR and analysed by Judith Senger, Dr Mei Yee Tang, and Professor Falko Sniehotta. Anonymised data may also be shared, with other researchers. This study has received approval from the ethics committees of the University of Twente (*Ref*: 210090) and Newcastle University (*Ref*: 12113/2020)

How long will my data be stored? In order to help inform future pandemic and epidemic preparedness, the data you have provided will be helpful even beyond the current coronavirus pandemic. Your anonymous data will, therefore, be stored securely for up to 10 years by Professor Falko Sniehotta after the end of the research for this study. At this point, the data will be reviewed, and if they are still deemed to be of public interest, they may be retained for longer. If not, your data will be permanently deleted.

Local Data Protection Privacy Notice The lawful bases used in this survey are that it is undertaken as a task in the public interest and necessary for research and public health purposes, in accordance with the General Data Protection Regulation and national laws. *Concerns* If you are concerned about this study, or how your data is being processed, or if you would like to contact us about your rights, please get in touch with Judith Senger in the first instance at j.senger@student.utwente.nl.

Results

If you would like to receive a summary of the results, you can contact Judith Senger (j.senger@student.utwente.nl).

End of Block: Participant Information Sheet

Start of Block: Informed Consent

I hereby confirm that my participation in the study "The Covid-19 Pandemic Health and Wellbeing Impact Study" is completely voluntary. I understand that all my answers will be used for scientific research to improve actions taken in response to the coronavirus pandemic and to inform the response to similar future outbreaks. I understand that my data will be stored securely, however, no personal data will be stored, and my answer will be completely anonymous. As I am submitting anonymous data, I understand that it will not be possible to withdraw my answers after they have been submitted. I understand that my data gathered in this study will be shared with relevant researchers and government agencies. Please note that you can stop the survey at any time without having to give a reason and without any consequences. If you have any questions about your rights as a research participant or would like to receive information, ask questions, or discuss concerns about this study, please contact Judith Senger (j.senger@student.utwente.nl). By ticking the box below, you are agreeing that you are at least 18 years old, living in the United Kingdom, have read the information about the study, and that you voluntarily agree to take part in it.

○ I agree to participate in this study.

End of Block: Informed Consent

Start of Block: Demographics

First of all, we would like to know more about your demographic characteristics.

Q1 How old are you in years?

18-76 or older

Q2 What is your sex?

○ Male (1) Female (2) Other (3)

Q3 Which do you feel best describes you?

▼ White - English/Welsh/Scottish/Northern (1) ... Other ethnic group - Any other ethnic group (17)

Q4 Which is the highest level of education you have attained to date?

▼ No formal qualifications (1) ... Other (6)

Q5 In which district do you live?

○ North East (1) North West (2) Yorkshire and The Humber (3) East Midlands (4) West Midlands (5) East of England (6) London (7) South East of England (8) South West of England (9) Wales (11) Scotlands (12) Northern Ireland (13)

End of Block: Demographics

Start of Block: Housing, Garden, Neighbourhood

Next, we would like to know more about your current housing situation.

Q6 Choose as many as apply:

- ☐ I live alone (1)
- ☐ I live with children under 18 (2)
- ☐ I live with people in a Covid-19 risk group (people over 65 years and/or with chronic disease) (3)
- ☐ I live with other people who are not considered to be in a Covid-19 risk group (4)
- ☐ None of the above (5)

Display This Question:
If Choose as many as apply: != I live alone

Q7 How many adults live in your household including yourself?

▼ 1 (11) ... 6 or more (12)

Display This Question:
If Choose as many as apply: = I live with children under 18

Q8 How many children aged 0-13 live in your household?

▼ None (10) ... 6 or more (9)

Display This Question:
If Choose as many as apply: = I live with children under 18

Q9 How many children aged 14-17 live in your household?

▼ None (11) ... 6 or more (9)

Q10 How many bathrooms do you have?

▼ 1 (9) ... 5 or more (8)

Q11 How many bedrooms do you have?

▼ 1 (10) ... 6 or more (9)

Q13 Do you have a garden?

○ No (1) Shared garden (2) Private small garden (3) Private large garden (4)

Q14 How difficult would it be for you (and your household members) to self-isolate in your home for 10 days (for example if you had symptoms, a positive test or been in contact with someone who had Covid-19)

○ Extremely difficult (1) Rather difficult (2) Neither easy nor difficult (3) Rather easy (4) Extremely Easy (5)

Q15 Does your household have a car?

○ Yes (1) No (0)

Q16 Before the pandemic, how did you get to work (or make the most common trips if you are not working)?

☐ Car (1) Public transport (2) Cycling (3) Walking (4) Other (5)

Q17 How much disposable income (i.e. the amount of money that households have available for spending and saving after direct taxes such as Income Tax and Council Tax) does your household have a month? It includes earning from employment, private pensions and investments, as well as cash benefits provided by the state.

○ Less than £500 (1) £500 - £1000 (2) £1000- £2000 (3) £2000- £3000 (4) £3000 - £4000 (5) £4000 - £5000 (6) £5000- £6000 (7) £6000- £7000 (8) £7000 - £8000 (9) £8000 - £9000 (10) £9000 - £10000 (11) £10000 or more (12)

Q18 Please assess your private financial situation over the past year.

○ Improved (1) Remained the same (2) Worsened (3)

Q19 A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total monthly income: How easy is it for your household to make ends meet?

○ Very easily (1) Fairly easily (2) With some difficulty (3) With difficulty (4) With great difficulty (5)

Q20 Please indicate:

How easy or pleasant is it to walk in your neighbourhood? (1)
How easy or pleasant is it to bicycle in your neighbourhood? (2)
How easy or difficult is it to do other physical activities in your neighbourhood? (3)

To be assessed by: Extremely difficult or unpleasant (1) Somewhat difficult or unpleasant (2) Neutral (3) Somewhat easy or pleasant (4) Extremely easy or pleasant (5)

End of Block: Housing, Garden, Neighbourhood

Start of Block: Work and employment

Q21 The following question block will include questions about your work and financial situation.

Q22 Which of these categories best describe your situation?

○ Employee (1) Self-employed with employees (2) Self-employed without employees (3) Unemployed (4) Unable to work due to long-term illness or disability (5) Retired (6) Full-time homemaker / fulfilling domestic tasks (7) Student (8)

Q22b What is the job position of the main income earner in your household?

○ Higher managerial roles, administrative or professional (1)

○ Intermediate managerial roles, administrative or professional (2)

○ Supervisory or clerical and junior managerial roles, administrative or professional (3)

○ Skilled working class Skilled manual workers (4)

○ Working class Semi-skilled and unskilled manual workers (5)

○ Non-working State pensioners, casual and lowest grade workers, unemployed with state benefits only (6)

Q23 During the Covid-19 pandemic have you lost your job(s)/contract(s)?

○ Yes, permanently (1) Yes, temporarily (2) I have been furloughed since the beginning of the pandemic (3) No (4)

Display This Question:

If Which of these categories best describe your situation? != Unemployed

And Which of these categories best describe your situation? != Unable to work due to long-term illness or disability

And Which of these categories best describe your situation? != Full-time homemaker / fulfilling domestic tasks

And Which of these categories best describe your situation? != Retired

And Which of these categories best describe your situation? != Student

Q24 Are you a health or social care professional?

○ Yes (1) No (2)

Display This Question:

If Which of these categories best describe your situation? != Unemployed

And Which of these categories best describe your situation? != Unable to work due to long-term illness or disability

And Which of these categories best describe your situation? != Retired

And Which of these categories best describe your situation? != Full-time homemaker / fulfilling domestic tasks

And Which of these categories best describe your situation? != Student

Q25 Are you a keyworker?

○ Yes (1) No (2) Don't know (3)

Display This Question:

If Which of these categories best describe your situation? != Unemployed

And Which of these categories best describe your situation? != Unable to work due to long-term illness or disability

And Which of these categories best describe your situation? != Retired

And Which of these categories best describe your situation? != Full-time homemaker / fulfilling domestic tasks

Q26 Does your work or education put you at high risk for Covid-19?

○ Yes (1) No (2)

Display This Question:

If Which of these categories best describe your situation? != Unemployed

And Which of these categories best describe your situation? != Retired

And Which of these categories best describe your situation? != Unable to work due to long-term illness or disability

And Which of these categories best describe your situation? != Full-time homemaker / fulfilling domestic tasks

Q27 Are you able to work from home since the beginning of Covid-19?

○ Yes, fully (1) Partly (2) No (3)

Display This Question:

If Which of these categories best describe your situation? != Unemployed

And Which of these categories best describe your situation? != Unable to work due to long-term illness or disability

And Which of these categories best describe your situation? != Retired

And Which of these categories best describe your situation? != Full-time homemaker / fulfilling domestic tasks

Q28 Within the last two weeks, how often have you…?
(If you are a student replace work/job with your study or educational program)

...kept worrying about work when you were not working (1)
...felt too tired after work to do some of the household jobs which need to be done (2)
...found that your job prevented you from giving the time you wanted to your family (3)
...found it difficult to concentrate on your job because of your family responsibilities (4)
...found that your family responsibilities prevented you from giving the time you should to job (5)

To be assessed by: Never (1) Rarely (2) Somtimes (3) Most of the time (4) Always (5)

Display This Question:

If Which of these categories best describe your situation? != Unemployed

And Which of these categories best describe your situation? != Unable to work due to long-term illness or disability

And Which of these categories best describe your situation? != Retired

And Which of these categories best describe your situation? != Full-time homemaker / fulfilling domestic tasks

Q29
Looking back on the previous year, how often have you worked in your free time to meet work or educational demands?

○ Daily (1) Several times a week (2) Several times a month (3) Less often (4) Never (5)

Display This Question:

If Which of these categories best describe your situation? != Unemployed

And Which of these categories best describe your situation? != Unable to work due to long-term illness or disability

And Which of these categories best describe your situation? != Retired

And Which of these categories best describe your situation? != Full-time homemaker / fulfilling domestic tasks

And Which of these categories best describe your situation? != Student

Q30 How likely or unlikely do you think it is that you might lose your job in the next 3 months?

○ Very likely (1) Rather likely (2) Neither likely nor unlikely (3) Rather unlikely (4) Very unlikely (5)

End of Block: Work and employment

Start of Block: Your health and personal Covid-19 experiences

Q31 In this section, we will ask you a few questions about your views and experiences to Covid-19, how you dealt with it and how your general health and well-being is.

Q32 In general, would you say your health is ...

○ Poor (1) Fair (2) Good (3) Very good (4) Excellent (5)

Q33 Do you have a chronic condition? If yes, please specify.

○ Yes (1) No (0)

Q34 Do you have a registered disability? If yes, please specify.

○ Yes (1) No (0)

Q35 How much do you weigh?

▼ 45kg / or 7 stone and 1.2 lb or less (4) ... 150kg / 23 stone and 8.7 lb or more (117)

Q36 How tall are you?

▼ 145cm / 4,76 feet or smaller (4) ... 205cm / 6.73 feet or taller (66)

Q37 To your knowledge, are you, or have you been, infected with Covid-19?

○ Yes (1) No (2)

Display This Question:

If To your knowledge, are you, or have you been, infected with Covid-19? = Yes

Q38 Was the Covid-19 infection confirmed by a test?

○ Yes (1) No (2)

Display This Question:

If To your knowledge, are you, or have you been, infected with Covid-19? = Yes

Q39 The course of the disease was..

○ Mild (1) Severe (2)

Q40 Do you know people in your immediate social environment who are or have been infected with Covid-19 (suspected or confirmed)?

○ Yes (1) No (2)

Q41 Do you know someone who died from Covid-19?

○ Yes (1) No (2)

End of Block: Your health and personal Covid-19 experiences

Start of Block: Health literacy and Covid-19 knowledge

Q42 How easy or difficult would you say is it to...
…find the information you need related to Covid-19? (1)
…understand information about what to do if you think you have Covid-19? (2)
…judge if the information about Covid-19 in the media is reliable? (3)
…follow the recommendations on how to protect yourself from contracting Covid-19? (4)
…follow recommendations about when to stay at home from work/school, and when not to? (5)
…follow recommendations about when to engage in social activities, and when not to? (6)

To be assessed by: Very easy (1) Rather easy (2) Neither easy nor difficult (3) Rather difficult (4) Very difficult (5)

Q43 Can you tell us what you think the most common symptoms of Covid-19 are?
Please select up to 3

☐ Cough (1) High temperature / fever (2) Shortness of breath / difficulty breathing (3) Runny or blocked nose (4) Aches and pains (5) Chest pain (6) Chills / shivering (7) Sore throat (8) Diarrhoea (9) Headaches (10) Stomach ache (11) Feeling tired or having low energy (12) Loss of sense of smell / taste (13)

Q44 How would you rate your knowledge level on how to prevent the spread of Covid-19?

○ Very poor knowledge (1) Poor knowledge (2) Neither good nor bad knowledge (3) Good knowledge (4) Very good knowledge (5)

Q45 Please indicate whether you think the measures to prevent the spreading of Covid-19 that were imposed within the last year were appropriate.

○ I think the measures were too strict (1) I think the measures were appropriate (2) I think the measures could have been stricter (3)

Q46 Since the beginning of the pandemic, to what extend did you...

Frequently wash your hands with soap and water for at least 20 seconds (1)
Avoid touching your eyes, nose and mouth with unwashed hands (2)
Use disinfectants to clean hands when soap and water were not available (3)
Avoid meetings, events and other social gatherings (4)
Use antibiotics to prevent or treat COVID-19 (5)
Wear a mask in public (6)
Ensure physical distancing in public (7)
Disinfect surfaces (8)
Carry disinfectant to clean your hands when out of house (9)
Practice social distancing by doing your grocery shopping at off-peak hours and/or less often. (10)
Maintain at least 1.5 metre distance between yourself and others. (11)
Stay at home from work/education when healthy (12) Staying home sick, or, hypothetically staying home if you were sick (except to get medical care). (13)

To be assessed by: Not at all (1) Rarely (2) Sometimes (3) Most of the times (4) Very much so (5)

Q47 Have you already been vaccinated against Covid-19?

○ Yes. I received the first vaccination. (1) Yes. I received the first and second vaccination. (2) No (3)

Q48 What do you consider to be your own probability of getting infected with Covid-19?

○ Extremely unlikely (1) Somewhat unlikely (2) Neither likely nor unlikely (3) Somewhat likely (4) Extremely likely (5)

Q49 How severe would contracting Covid-19 be for you (how seriously ill do you think you will be)?

○ Not at all severe (1) Slightly severe (2) Neither severe nor not severe (3) Somewhat severe (4) Very severe (5)

Q50 I know how to to protect myself from Covid-19.

○ Not at all (1) Like somewhat (2) Very much so (3)

Q51 For me avoiding an infection with Covid-19 over the past year was...

○ Extremely difficult (1) Somewhat difficult (2) Neither easy nor difficult (3) Somewhat easy (4) Extremely easy (5)

Q52 How much do you trust information about Covid-19 from the following sources?

Television (1) Newspapers (2) Health workers (3) Social media (4) Radio (5) Department of Health and Social Care (6) Public Health England (7) Celebrities and social media influencers (8) World Health Organization (WHO) (9) https://www.gov.uk/coronavirus (10)

To be assessed by: Very little trust (1) Little trust (2) A moderate amount of trust (3) Trust (4) A great deal of trust (5)

Q53 How often do you use the following sources for information about Covid-19?

Television (1) Newspapers (2) Health workers (3) Social media (4) Radio (5) Department of Health and Social Care (6) Public Health England (7) Celebrities and social media influencers (8) World Health Organization (WHO) (9) https://www.gov.uk/coronavirus (10)

To be assessed by: Never (1) Rarely (2) Sometimes (3) Often (4) Very often (5)

End of Block: Health literacy and Covid-19 knowledge

Start of Block: Internet usage

Q54 In the next section, we would like to know more about your internet accessibility and internet usage behaviour.

Q55 Indicate which technical devices you have available to use the internet.

☐ Mobile phone (1) Laptop (2) Tablet (3) Computer at home (4) Computer at work (5) Other (6) None (7)

Q56 Do you have internet at home?

○ No (1) Yes, but it is not fast and reliable. (2) Yes, it is fast or reliable (3)

Q57 Do you generally feel safe using the internet?

○ Yes (1) No (2)

Q58 Please indicate to what extent you agree with the following statements.

I feel confident in performing the following internet activities...

Banking online (1)
Grocery shopping (2)
Ordering medical supply or masks (3)
Work from home (4)
Spending quality time with friends and family (5)
Shopping for clothes, shoes and accessories (6)
Order takeaway food deliveries (7)
Get medical advice (8)
Have fun and get entertainment (e.g. watching movies, playing online games) (9)
Making an appointment for a Covid-19 test (10)
Making appointments for doctors (11)

To be assessed by: Totally disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Totally agree (5)

End of Block: Internet usage

Start of Block: Psychological

Q59 In this section of the questionnaire, we would like to ask you some more general questions about how you deal with everyday life tasks and what your approach is when it comes to getting things done.

I frequently have difficulties juggling my time and tasks (1)
I often find myself feeling snowed under with the tasks I have to do (2)
I frequently feel overstretched (3)
I am often juggling too many things at the same time (4)
When I have an important deadline, I focus all my energy on meeting it (5)
When faced with more than one goal, I concentrate on one goal at a time (6)
It is typical for me to focus all my effort on the most urgent demand (7)
I concentrate on one activity at the time to avoid failure (8)

To be assessed by: Totally disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Totally agree (5)

Q60 Please indicate to what extent you agree with the following statements.

When working on one challenge, I tend to fall behind on other commitments (1)
Focusing on one task leads to me disengage with other tasks (2)
Having multiple tasks at once leads to me being unproductive (3)
In busy times, I lack attention and dedication for everyday tasks (4)
I can always have some breathing space if things get too demanding (5)
I have wriggle room to take a step back from things when life becomes too much (6)
I can always take a breather whenever I need to (7)
I always have the flexibility to find my own headspace during overwhelming times (8)

To be assessed by: Totally disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Totally agree (5)

Q61 Please indicate for each of the statements below, whether or not the statement is characteristic of you.

I consider how things might be in the future, and try to influence those things with my day to day behaviour. (1)
Often I engage in a particular behaviour in order to achieve outcomes that may not result for many years. (2)
I only act to satisfy immediate concerns, figuring the future will take care of itself. (3)
My behaviour is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my action. (4)
My convenience is a big factor in the decisions I make or the actions I take. (11)
I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes (5)

Q62 Please indicate for each of the statements below, whether or not the statement is characteristic of you.

I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years. (1)
I think it is more important to perform a behaviour with important distant consequences than a behavior with less-important immediate consequences. (6)
I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level. (7)
I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time. (8)
I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date. (9)
Since my day to day work has specific outcomes, it is more important to me than behaviour that has distant outcomes. (10)

To be assessed by: Extremely uncharacteristic (1) Somewhat uncharacteristic (2) Uncertain (3) Somewhat characteristic (4)

Q63 How confident do you feel to get support from someone in your social surrounding in each of the following situations?

If you needed help around the house when ill (1)
If you needed advice about a serious personal or family matter (2)
If you needed help when looking for a job (3)
If you were feeling a bit depressed and wanting someone to talk to (4)
If you needed help in looking after your children (5)
If you needed help with shopping (6)

To be assessed by: Not confident at all (1) Rather not confident (2) Neither confident nor not confident (3) Rather confident (4) Completely confident (5)

End of Block: Psychological

Start of Block: Outcome

Q64 This final part of the questionnaire will be asking you questions about your well-being and behaviour since the beginning of the pandemic. Please take a look back at the previous year and

indicate which answer you think best represents an overall impression of your experiences within the last year.

Q65 Since the beginning of the pandemic, have you done the following?

Exercised less than I did before the pandemic (1) Drank more alcohol than I did before the pandemic (2) Ate more unhealthy food than I did before the pandemic (3) Smoked more than I did before the pandemic (4) Postponed vaccination for myself or my child (5) Avoided going to the doctor for a non Covid-19-related problem (6) Behaved aggressively towards others (7)

To be assessed by: Yes (1) No (0)

Q66 We would now like for you to indicate your general well-being:Since the beginning of the pandemic…

… I have felt cheerful and in good spirits (1)
… I have felt calm and relaxed (2)
… I have felt active and vigorous (3)
… I woke up feeling fresh and rested (4) … my daily life has been filled with things that interest me (5)

To be assessed by: At no time (1) Some of the time (2) Less than half the time (3) More than half the time (4) Most of the time (5) All of the time (6)

Q67 Please choose the answer that best represents the degree of your agreement with the statements provided below over the course of the Covid-19 lockdown.#

I think my quality of life is lower than before (1)
I think my mental health has deteriorated (2)
I think my physical health may deteriorate (3)
I think my romantic and sex life has deteriorated (4)
I think my mental health has deteriorated (5)
I feel more tense than before (6)
I feel more depressed than before (7)
I feel that my personal safety is at risk (8)
I feel that I lacked culture and art (9)

To be assessed by: Completely disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Completely agree (5)

Q68 Please indicate on a scale from 1 to 10, where 1 means very dissatisfied and 10 means very satisfied.

	0	10
All things considered, how satisfied would you say you are with your life these days? ()		

Q69 Here, 1 means you are very unhappy and 10 means you are very happy.

0 10

Taking all things together on a scale of 1 to 10, how happy would you say you are? ()	

Q70 To what extent do you agree or disagree with the following statements?

I am optimistic about my future (1) I am optimistic about my children's or grandchildren's future (2) I find it difficult to deal with important problems that come up in my life (3) When things go wrong in my life, it generally takes me a long time to get back to (4)

To be assessed by: Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

Q71 Please indicate for each of the three statements which is closest to how you have been feeling during the Covid-19 lockdown.

I have felt particularly tense (1)
I have felt lonely (2)
I have felt downhearted and depressed (3)

To be assessed by: At no time (1) Some of the time (2) Less than half of the time (3) More than half of the time (4) Most of the time (5) All of the time (6)

Q72 During the Covid-19 lockdown, how often have you been bothered by the following problems?

Feeling nervous, anxious or on edge (1)
Not being able to stop or control worrying (2)
Little interest or pleasure in doing things (3)
Feeling down, depressed, or hopeless (4)

To be assessed by: Not at all (1) Several days (2) More than half the days (3) Nearly every day (4)

End of Block: Outcome